SONY

DIGITAL VIDEOCASSETTE RECORDER

# DSR-1800
# DSR-1800P

DIGITAL VIDEOCASSETTE PLAYER

# DSR-1600
# DSR-1600P

SDI/AES/EBU INPUT/OUTPUT BOARD

# DSBK-1801

SDTI (QSDI) INPUT/OUTPUT BOARD

# DSBK-1802

i.LINK/DV INPUT/OUTPUT BOARD

# DSBK-1803

SDI/AES/EBU OUTPUT BOARD

# DSBK-1601

SDTI (QSDI) OUTPUT BOARD

# DSBK-1602

## SERVICE MANUAL

Volume 1 1st Edition

DVCAM™

## ⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

## ⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

## ⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

## ⚠ AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

**CAUTION**

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

**ADVARSEL**

Lithiumbatteri - Eksplosjonsfare.
Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandøren.

**Vorsicht!**

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

**VARNING**

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en likvärdig typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt gällande föreskrifter.

**ATTENTION**

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.
Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

**VAROITUS**

Paristo voi räjähtää jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

**ADVARSEL!**

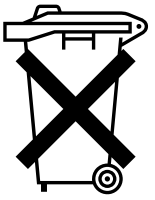
Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

**For the customers in the Netherlands**
**Voor de klanten in Nederland**

Dit apparaat bevat een $MnO_2$-Li batterij voor memory back-up.

Raadpleeg uw leverancier over de verwijdering van de batterij op het moment dat u het apparaat bij einde levensduur afdankt.

Gooi de batterij niet weg. maar lever hem in als KCA.



Bij dit produkt zijn batterijen geleverd. Wanneer deze leeg zijn, moet u ze niet weggooien maar inleveren als KCA.

**Für Kunden in Deutschland**

Entsorgungshinweis: Bitte werfen Sie nur entladene Batterien in die Sammelboxen beim Handel oder den Kommunen. Entladen sind Batterien in der Regel dann, wenn das Gerät abschaltet und signalisiert “Batterie leer” oder nach längerer Gebrauchsdauer der Batterien “nicht mehr einwandfrei funktioniert”. Um sicherzugehen, kleben Sie die Batteriepole z.B. mit einem Klebestreifen ab oder geben Sie die Batterien einzeln in einen Plastikbeutel.

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# Manual Structure

## Purpose of this manual

This manual is the Service Manual Volume 1 for the digital videocassette recorder DSR-1800/1800P and the digital videocassette player DSR-1600/1600P, the option boards SDI/AES/EBU Input/Output Board DSBK-1801, SDI/AES/EBU Output Board DSBK-1601, SDTI (QSDI) Input/Output Board DSBK-1802, SDTI (QSDI) Output Board DSBK-1602 and i.LINK/DV Input/Output Board DSBK-1803.
This manual contains the maintenance information of this equipment, and servicing information necessary for parts replacement and adjustments.

## Related manuals

In addition to this Service Manual Volume 1, the following manuals are provided.

- **Operation Instructions**
  DSR-1800/1800P (Supplied with equipment)
  Part number: 3-204-675-12 (English; for UC, CE)
  3-204-675-22 (French; for UC, CE)
  3-204-675-32 (German; for CE)
  3-204-675-42 (Italian; for CE)

  DSR-1600/1600P (Supplied with equipment)
  Part number: 3-204-677-12 (English; for UC, CE)
  3-204-677-22 (French; for UC, CE)
  3-204-677-32 (German; for CE)
  3-204-677-42 (Italian; for CE)

  DSBK-1801/1802/1803/1601/1602 (Supplied with Model DSBK-1801/1802/1803/1601/1602)
  Part number: 3-204-692-01

- **Servive Manual Volume 2 (Not Supplied with equipment)**
  Contains the semiconductor pin assingnments, parts lists, block diagrams, board layouts and schematic diagrams.
  Part number: 9-955-242-21

- **“Semiconductor Pin Assignments” CD-ROM (Available on request)**
  This “Semiconductor Pin Assignments” CD-ROM allows you to search for semiconductors used in Communication System Solutions Network Company equipment.
  Semiconductors that cannot be searched for on this CD-ROM are listed in the maintenance manual for the corresponding unit. The maintenance manual contains a complete list of all semiconductors and their ID Nos., and thus should be used together with the CD-ROM.
  Part number: 9-968-546-XX

## Contents

The following is a summary of all the sections for understanding the contents of this manual.

**Section 1 Operating Instruction**
Describes the contents of the operating instructions.

**Section 2 Installation**
This section is described in Installation Manual.

**Section 3 Service Overview**
Describes the replacement of the parts, the locations of the main parts and boards, notes and so on.

**Section 4 Error Messages**
Describes the alarms and countermeasures to be displayed when the unit detects abnormality.

**Section 5 Maintenance Menu**
Describes the maintenance menu.

**Section 6 Periodic Inspection and Maintenance**
Describes the periodic inspection and cleaning procedure.

**Section 7 Replacement of Mechanical Parts**
Describes the replacement procedures and adjustment after replacement.

**Section 8 Tape Path Alignment**
Describes the adjustment procedures of tape path system.

**Section 9 Electrical Alignment After Replacement Boards**
Describes the electrical adjustments after replacement boards.

**Section 10 Electrical Alignment**
Describes the electrical adjustment of each board.

# Section 1
# Operating Instructions

Reprinted from the operating instructions

## 1-1. DSR-1800

3-204-675-12(2)

SONY

*Digital Videocassette Recorder*

**Operating Instructions**
Before operating the unit, please read this manual thoroughly and retain it for future reference.

DVCAM

DSR-1800/1800P

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## Owner's Record

The model and serial numbers are located at the rear. Record these numbers in the spaces provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

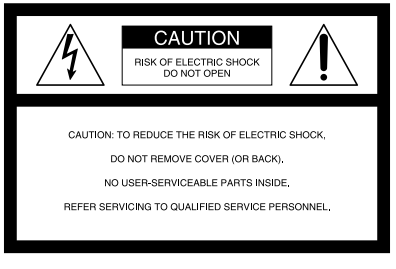
Model No. _____ Serial No. _____

**WARNING**

**To prevent fire or shock hazard, do not expose the unit to rain or moisture.**

**To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.**

**THIS APPARATUS MUST BE EARTHED.**


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING:** THIS WARNING IS APPLICABLE FOR USA ONLY.
Using this unit at a voltage other than 120 V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

**For customers in the USA**
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

**Caution**
Television programs, films, video tapes and other materials may be copyrighted.
Unauthorized recording of such material may be contrary to the provisions of the copyright laws.

**For customers in Europe (DSR-1800P only)**
This product with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.
Compliance with these directives implies conformity to the following European standards:
• EN60065: Product Safety
• EN55103-1: Electromagnetic Interference (Emission)
• EN55103-2: Electromagnetic Susceptibility (Immunity)
This product is intended for use in the following Electromagnetic Environment(s):
E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors) and E4 (controlled EMC environment, ex. TV studio).





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# *Overview* Chapter 1

## Features

The DSR-1800/1800P is a $^1/_4$-inch digital video cassette recorder using the DVCAM digital recording format. It achieves stable, superb picture quality by digitally processing video signals separated into color difference signals and luminance signals (component method).
The unit is equipped with a variety of functions needed for videocassette recorders and players used in professional digital video editing systems. It supports the ClipLink™ function developed by Sony Corporation for highly efficient video editing. When connected to a Sony EditStation™, the unit serves as part of a powerful non-linear editing system*.
The unit is also equipped with a full-fledged analog interface to support hybrid systems that combine conventional analog equipment with digital equipment.

* Non-linear editing: This is an editing method that uses video and audio signals digitally encoded and recorded on a hard disk as digital data. When compared with conventional (linear) editing methods, non-linear editing offers vastly improved efficiency in editing operations, for example, by eliminating tape transport time.

The main features of the unit are described in the following.

### DVCAM Format

DVCAM is based on the consumer DV format, which uses the 4:1:1 component digital format, and provides a $^1/_4$-inch digital recording format for professional use.

#### High picture quality, high stability

Video signals are separated into color difference signals and luminance signals, which are encoded and compressed to one-fifth size before being recorded to ensure stable and superb picture quality.

Because the recording is digital, multi-generation dubbing can be performed with virtually no deterioration of quality.

#### Wide track pitch

The recording track pitch is 15 µm, fully 50 percent wider than the 10-µm track pitch of the DV format. Thanks to this feature, the DVCAM format sufficiently meets the reliability and precision requirements of professional editing.

#### High-quality PCM digital audio

PCM recording makes for a wide dynamic range and a high signal-to-noise ratio, thereby enhancing sound quality.
There are two recording modes: 2-channel mode (48-kHz sampling and 16-bit quantization), which offers sound quality equivalent to the DAT (Digital Audio Tape) format, or 4-channel mode (32-kHz sampling and 12-bit quantization).

#### Playback compatibility with DV and DVCPRO formats

A DV cassette recorded on a DV format VCR as well as a DVCPRO (25M) format recorded cassette can be played back on this unit.

**Note**

When playing back a tape recorded in DVCPRO (25M) format, the SDTI and i.LINK outputs *(see "Digital interfaces" on page 6)* of this unit are muted. Furthermore, it is not possible to playback the cue-audio track of the tape.

### Support for three cassette sizes

There are two sizes of DVCAM cassette: standard and mini. You can use either size with this unit.
The unit also accepts L and M sizes of DVCPRO cassette.

- When a cassette is inserted, the reel mechanism of the unit automatically adjusts to the size of the inserted cassette.
- The capacity of a standard cassette is 184 minutes of recording/playback, and that of a mini cassette is 40 minutes.

## A Wealth of Interfaces

### Digital interfaces

The following optional digital interfaces are available for use with the unit.

**SDTI (QSDI)* (optional DSBK-1802 SDTI (QSDI) Input/Output Board):** When the unit is fitted with the optional DSBK-1802 board, SDTI (QSDI)-format video, audio and time code signals can be transferred between the unit and the Sony EditStation at normal speed. When this unit is connected to another DVCAM VCR, it is possible to copy compressed signals between the two VCRs.

**SDI (serial digital interface)/AES/EBU (optional DSBK-1801 SDI/AES/EBU Input/Output Board):** When the unit is fitted with the optional DSBK-1801 board, it can input and output D1 (component) format digital video and audio signals and also AES/EBU-format digital audio signals.

**i.LINK (DV)** (optional DSBK-1803 i.LINK/DV Input/Output Board):** When the unit is fitted with the optional DSBK-1803 board (i.LINK compatible), it can input and output digital video and audio signals in DV format.

* SDTI is the name of a standard interface established as SMPTE 305M. QSDI is a type of SDTI. This unit uses SDTI to transmit DV data, and the input/output connectors are labeled "SDTI (QSDI)."

** i.LINK and i are trademarks and indicate that this product is in agreement with IEEE1394-1995 specifications and their revisions.

### Analog interfaces

The unit also comes with analog interfaces enabling it to be connected to analog video and audio equipment.

**Analog video:** These interfaces include a component interface, composite interface, and S-video interface.

**Analog audio:** Four channels each of input and output are provided. It is also possible to connect a microphone to the unit.

## Facilities for High-Efficiency Editing

The unit provides an abundance of functions that enhance editing efficiency and precision.

### Cross-fade editing

For audio editing, you can select from cut-in editing, fade-in/fade-out editing, and cross-fade editing.

### Support for ClipLink function

In response to commands sent from the EditStation, index pictures recorded on tape or ClipLink log data recorded in the cassette memory can be transferred to the EditStation. The EditStation operator can then efficiently use these pictures and data in a preliminary editing session.

*For an overview of the ClipLink function, see the appendix "ClipLink Guide" (page 104).*

### Internal time code generator and reader

An internal time code generator and reader enables time code compliant with SMPTE (for DSR-1800)/EBU (DSR-1800P) format to be recorded and played back. This allows editing to single frame precision.
Outputting or inputting time code (LTC) to or from an external device is also possible using the TIME CODE IN/OUT connectors.
The unit is also compatible with VITC.

### Remote control

The unit can be operated by remote control from an editing control unit that supports the RS-422A interface or from an optional SIRCS*-compatible remote control unit such as the DSRM-10.

* SIRCS (Sony Integrated Remote Control System): A command protocol to remote control Sony professional videocassette recorders/players.

### Playback control using search dial

The search dial on the front panel of the unit allows you to carry out playback operation in jog or shuttle mode without requiring an external editing control unit or remote control unit to be connected to the unit.

### High-speed search function

The unit has a picture search function that allows you to view color picture at playback speeds up to 85 times normal speed in forward and reverse directions.
When remote-controlling this unit in shuttle mode from an editing control unit or a remote control unit, you can search at any speed in the range 0 (still) to 60 times normal speed in both directions. You can also search frame-by-frame in jog mode.
At search speeds up to 10 times normal speed in both directions, you can also hear playback audio.

### Digital slow-motion playback

Using the frame memory function, the unit can show noise-free slow-motion playback at speeds ranging from 0 to $^1/_2$ times normal speed in both directions.

### Digital jog sound function

When searching at speeds in the range +1 to $+^1/_{30}$ or $-^1/_{30}$ to –1* times normal speed, the digital jog sound function is enabled. The audio signal is saved in temporary memory, and replayed according to the search speed. This allows searching on the sound track.

* The positive direction refers to forward movement of the tape, and the negative direction to reverse movement.

### Video process control

For analog video output and SDI-format video output, you can adjust the video output level, chroma signal output level, setup level (for DSR-1800), black level (for DSR-1800P), and chroma phase.

## Other Features

### Menu system for functionality and operation settings

The unit provides a menu system to make its various functions easier to use and set up its operation conditions.

### Superimposition function

Time code values, operation mode indications, error messages, and other text data can be superimposed and output in analog composite video signals.

### Easy maintenance functions

**Self-diagnostic/alarm function:** This function automatically detects setup and connection errors, operation faults, and other problems. It also displays a description of the problem, its cause, and the recommended response on the video monitor screen or time counter display.

**Digital hours meter:** The digital hours meter functions include four kinds of tally operations for operating hours, head drum usage hours, tape transport hours, and tape threading/unthreading times. The tally results can be viewed on the video monitor or the time counter display.

### Compatible with wide-screen aspect ratio (16:9)

The unit can record and play back aspect ratio information. When video accompanied by wide-screen aspect ratio information is recorded or played back, the unit can output the video signal also containing the aspect ratio information.

### Rack mountable

When you use the optional RMM-130 Rack Mount Kit, you can mount this unit onto an EIA-standard 19-inch rack (height = 4 units).

## Optional Accessories

### DSBK-1801 SDI/AES/EBU Input/Output Board

When installed in the unit, this optional board enables digital video and audio signals in the D1 format and also AES/EBU-format digital audio signals to be transferred between this unit and digital Betacam VCRs or other digital equipment.

### DSBK-1802 SDTI (QSDI) Input/Output Board

This interface allows video, audio and time code signals in SDTI (QSDI) format to be transferred at normal speed between this unit and the Sony EditStation. When this unit is connected to another DVCAM VCR, it is possible to copy compressed signals between the two VCRs.

### DSBK-1803 i.LINK/DV Input/Output Board

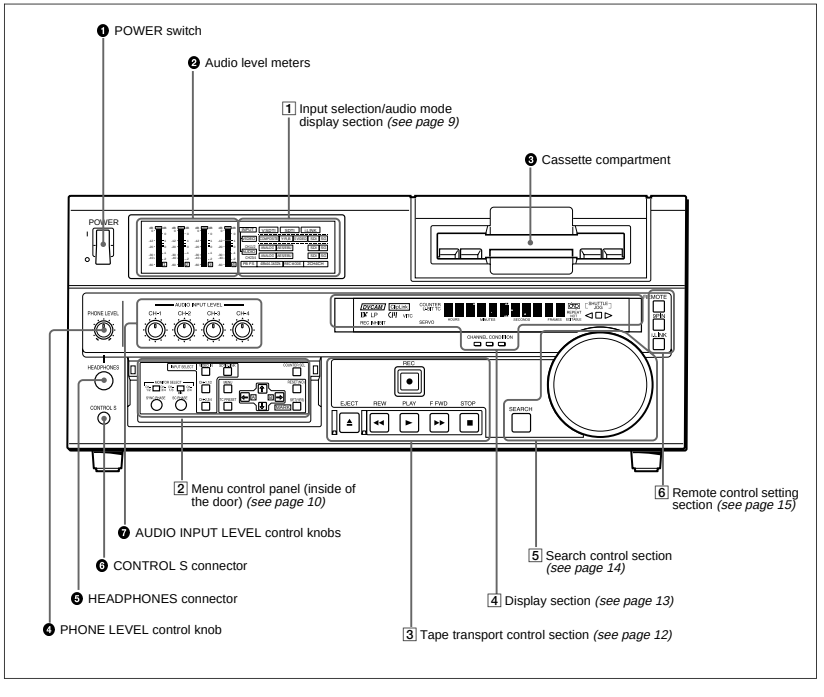
This board allows you to connect the unit to other equipment provided with a Sony DV connector to carry out editing or dubbing of digital video and audio signals.

### RMM-130 Rack Mount Kit

This kit can be used to mount the unit onto an EIA-standard 19-inch rack.

# Location and Function of Parts

## Front Panel


1 POWER switch
2 Audio level meters
1 Input selection/audio mode display section (see page 9)
3 Cassette compartment
2 Menu control panel (inside of the door) (see page 10)
6 Remote control setting section (see page 15)
7 AUDIO INPUT LEVEL control knobs
6 CONTROL S connector
5 HEADPHONES connector
4 PHONE LEVEL control knob
5 Search control section (see page 14)
4 Display section (see page 13)
3 Tape transport control section (see page 12)

**1 POWER switch**
Press the " | " side to power the unit on. When the unit is powered on, the display windows in the front panel lights. To power the unit off, press the " ○ " side of the switch.

**2 Audio level meters**
These show the audio levels of channels 1 to 4 (recording levels in recording mode or E-E mode* and playback level in playback mode).

* E-E mode: Abbreviation of "Electric-to-Electric mode." In this mode, video and audio signals input to the VCR are output after passing through internal electric circuits, but not through magnetic conversion circuits such as heads and tapes. This can be used to check input signals and for adjusting input signal levels.

**3 Cassette compartment**
Accepts DVCAM, DV and DVCPRO (25M) videocassettes.

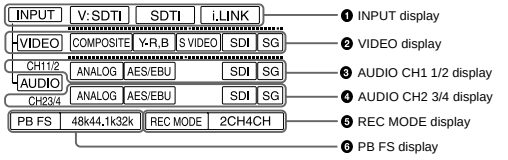
*For details of usable cassettes, see page 21.*

**4 PHONE LEVEL control knob**
Controls the volume of the headphones connected to the HEADPHONES connector.

**5 HEADPHONES connector (stereo phone jack)**
Connect stereo headphones for headphone monitoring during recording or playback.
The audio signal you want to monitor can be selected with the MONITOR SELECT switches on the menu control panel.

**6 CONTROL S connector (stereo minijack)**
Connect a SIRCS-compatible remote control unit such as the DSRM-10.

### 1 Input selection/audio mode display section




**1 INPUT display**
Indicates the input signal selected with the SDTI/i.LINK button in the INPUT SELECT section.
**V:SDTI:** Digital video signal in SDTI(QSDI) format
**SDTI:** Digital video and audio signals in SDTI(QSDI) format
**i.LINK:** Digital video and audio signals in i.LINK-compatible DV format
The SDTI/i.LINK button to function fully requires the optional DSBK-1802 and 1803 boards to be installed. The signal without the corresponding optional board installed in the unit can be neither selected nor indicated.

**2 VIDEO display**
Indicates the input video signal selected with the VIDEO IN button in the INPUT SELECT section.
**COMPOSITE:** Composite video signal
**Y–R, B:** Y, R–Y and B–Y component video signals
**S VIDEO:** S-video signal
**SDI:** SDI video signal (optional DSBK-1801 board required)
**SG:** Video test signal

**3 AUDIO CH1 1/2 display**
Indicates the input audio signal selected with the CH-1,1/2 button in the INPUT SELECT section.
**ANALOG:** Analog audio signal
**AES/EBU:** Digital audio signal in AES/EBU format (optional DSBK-1801 board required)
**SDI:** SDI audio signal (optional DSBK-1801 board required)
**SG:** Audio test signal

**4 AUDIO CH2 3/4 display**
Indicates the input audio signal selected with the CH-2,3/4 button in the INPUT SELECT section. The indications available are the same as for the AUDIO CH1 1/2 display described above.

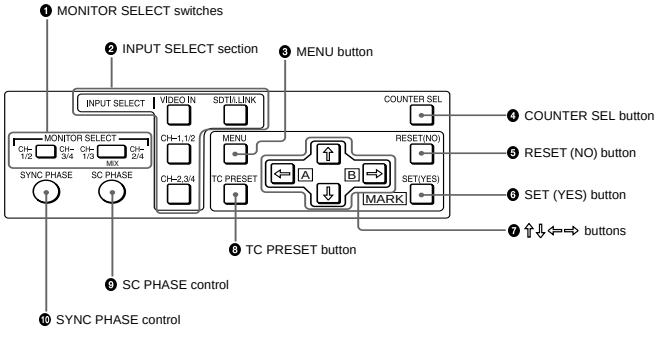
**5 REC MODE (audio recording mode) display**
Indicates the audio recording mode (2CH or 4CH) selected with the REC MODE menu item *(see page 63).*

**6 PB FS (playback audio sampling frequency) display**
Indicates the sampling frequency (48 kHz, 44.1 kHz or 32 kHz) at which audio is recorded on tape.

**7 AUDIO INPUT LEVEL control knobs**
When recording, you can use these knobs to set audio input levels for CH-1 (channel 1), CH-2, CH-3 and CH-4, respectively.
You can make these knobs inoperative with the REC LEVEL menu item *(see page 64).*

## 2 Menu control panel

The menu control panel is located on the inside of the door at the lower front of the unit. Pull the top of the door to open it.




### ❶ MONITOR SELECT switches

Use these switches to select the channels for audio output via the AUDIO MONITOR OUT connector on the rear panel and the HEADPHONES connector on the front panel.
Use the left switch to select the basic channel setting, then use the right switch to select the output format (monaural, stereo, or mix).

The following table lists the correspondence of left/right switch settings and channel/output format selections.

| Switch setting | | Selected channel and output format | |
|---|---|---|---|
| Left switch | Right switch | HEADPHONES connector | AUDIO MONITOR OUT connector |
| CH-1/2 | CH-1/3 CH-2/4 MIX | Channel 1 only (monaural) | Channel 1 only (monaural) |
| CH-1/2 CH-3/4 | CH-1/3 CH-2/4 MIX | Channels 1 and 2 (stereo) | Channels 1 and 2 (mix) |
| | CH-1/3 CH-2/4 MIX | Channel 2 only (monaural) | Channel 2 only (monaural) |
| CH-1/2 CH-3/4 | CH-1/3 CH-2/4 MIX | Channel 3 only (monaural) | Channel 3 only (monaural) |
| | CH-1/3 CH-2/4 MIX | Channels 3 and 4 (stereo) | Channels 3 and 4 (mix) |
| | CH-1/3 CH-2/4 MIX | Channel 4 only (monaural) | Channel 4 only (monaural) |

### ❷ INPUT SELECT section

**VIDEO IN button**
Each press of this button cycles through the following input video signal selection options.
- Composite video signal input to the VIDEO IN connectors
- Component video signals input to the COMPONENT VIDEO IN connectors
- S-video signal input to the S VIDEO IN connector
- SDI video signal input to the SDI IN connector (optional DSBK-1801 board required)
- Video test signal (selected with the INT VIDEO SG menu item *(see page 62)* generated by the internal signal generator

In the input selection/audio mode display section, the VIDEO display shows the selection made with this button.

**CH1,1/2 (audio channel 1 or 1/2) button**
Each press of this button cycles through the following input audio signal selection options for audio channel 1 (when in 2-channel mode) or for audio channels 1 and 2 (when in 4-channel mode).
- Analog audio signal(s) input to the AUDIO IN CH-1 connector (when in 2-channel mode) or AUDIO IN CH-1 and CH-2 connectors (when in 4-channel mode)
- Digital audio signal in AES/EBU format input to the DIGITAL AUDIO (AES/EBU) IN CH-1/2 connector (optional DSBK-1801 board required)
- SDI audio signal input to the SDI IN connector (optional DSBK-1801 board required)
- Audio test signal (selected with the INT AUDIO SG menu item *(see page 65)* generated by the internal signal generator

In the input selection/audio mode display section, the AUDIO CH1 1/2 display shows the selection made with this button.

**CH2,3/4 (audio channel 2 or 3/4) button**
Each press of this button cycles through the input audio signal selection options for audio channel 2 (when in 2-channel mode) or for audio channels 3 and 4 (when in 4-channel mode). The input audio signal selection options corresponding to those for the CH1,1/2 button described above are available.
In the input selection/audio mode display section, the AUDIO CH2 3/4 display shows the selection made with this button.

**SDTI/i.LINK (SDTI(QSDI) interface/i.LINK selection) button**
Each press of this button cycles through the following input signal selection options.
- Digital video signal in SDTI(QSDI) format input to the SDTI(QSDI) IN connector (optional DSBK-1802 board required)

  When this is selected, use the CH1,1/2 button and CH2,3/4 button to select the required input audio signals.
- Digital video and audio signals in SDTI(QSDI) format input to the SDTI(QSDI) IN connector (optional DSBK-1802 board required)
- Digital video and audio signals in i.LINK-compatible DV format, input to the i DV IN/OUT connector (optional DSBK-1803 board required)

In the input selection/audio mode display section, the INPUT display shows the selection made with this button.

### ❸ MENU button

Press this button to display the menu on the monitor screen and the time counter display. Press it again to return from the menu display to the usual display.

*On how to use the menu, see Chapter 4 "Menu Settings."*

### ❹ COUNTER SEL (selection) button

Selects the type of time data to be shown in the time counter display. Each press of this button cycles through three indicator display options: COUNTER (CNT: count value of the time counter), TC (time code), and U-BIT (user bits).

**Note**

When the REMOTE button in the remote control setting section is lit, the COUNTER SEL button does not operate. In this case, make the time data selection via the remote equipment that is connected to the REMOTE connector on the rear panel.

### ❺ RESET (NO) button

Press this button to:
- reset menu settings,
- reset the time count (COUNTER) shown in the time counter display to zero, or
- send a negative response to the prompts issued by the unit.

### ❻ SET (YES) button

Press this button to:
- save new settings, such as selected menu items and time code settings, to the memory of the unit, or
- send a positive response to the prompts issued by the unit.

### ❼ Arrow (⇧⇩⇦⇨) buttons

Use these buttons to move around the menu items, and also for setting time code and user bit data.

*For details on setting time code and user bit data, see "Using the Internal Time Code Generator" on page 43.*

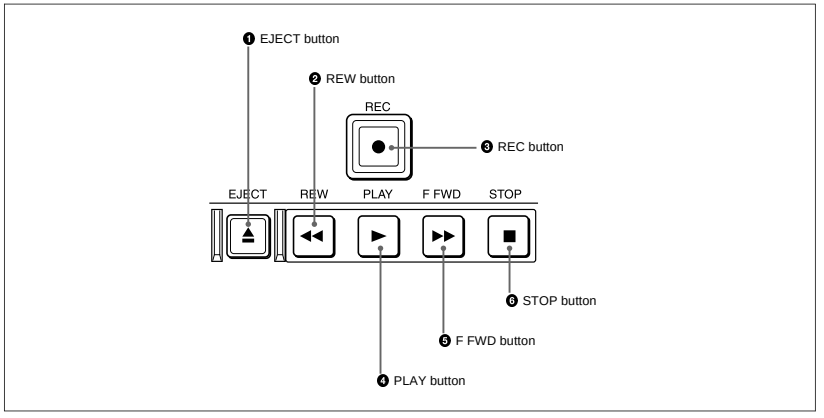
**❽ TC (time code) PRESET button**
Use this button when setting an initial time code value and user bit data.

*For details on setting time code and user bit data, see "Using the Internal Time Code Generator" on page 43.*

**❾ SC (subcarrier) PHASE control**
Turn this control to accurately adjust the subcarrier phase of the composite video output signal of the unit with respect to the reference video signal. Use a cross-point (Phillips) screwdriver to turn it.

**❿ SYNC (synchronization) PHASE control**
Turn this control to accurately adjust the synchronization phase of the output video signal of the unit with respect to the reference video signal. Use a cross-point (Phillips) screwdriver to turn it.

## 3 Tape transport control section




**❶ EJECT button**
When you press this button, it lights and the cassette is automatically ejected after a few seconds.

**❷ REW (rewind) button**
When you press this button, it lights and the tape starts rewinding (maximum 85 times normal speed).
When the F. FWD/REW menu item *(see page 57)* is set to PB, you can monitor the playback picture during the rewind.

**❸ REC (record) button**
When you press this button while holding down the PLAY button, it lights and recording begins.

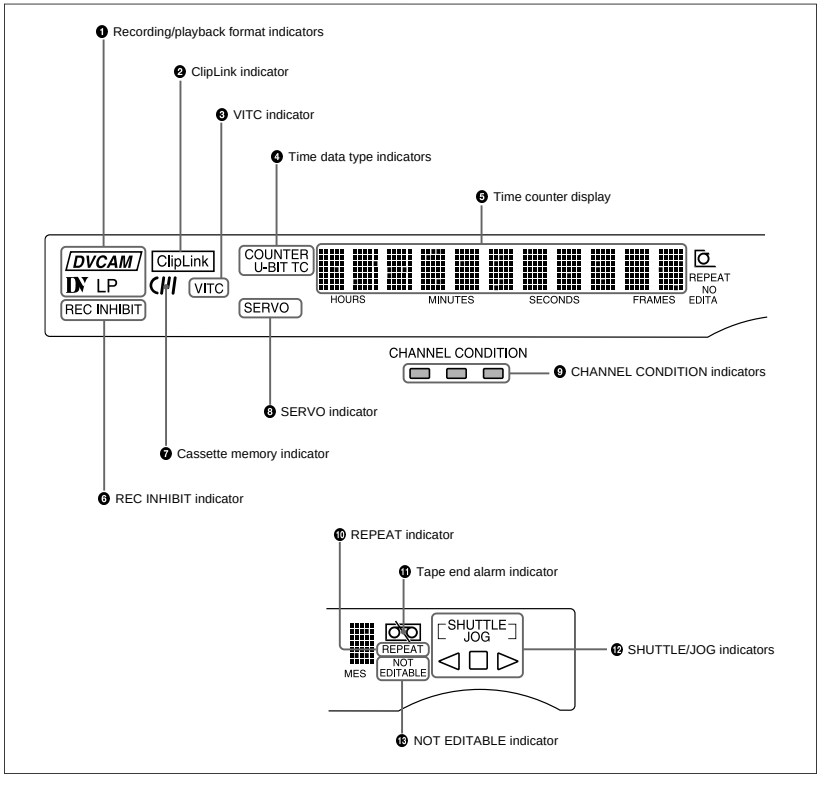
**❹ PLAY button**
When you press this button, it lights and playback begins. If you press this button during recording or editing, the recording or editing operation is stopped and this unit enters playback mode.

**❺ F FWD (fast forward) button**
When you press this button, it lights and the tape is fast forwarded (maximum 85 times normal speed).
When the F. FWD/REW menu item *(see page 57)* is set to PB, you can monitor the playback picture during the fast forward.

**❻ STOP button**
Press this button to stop the current tape transport operation.

**Note**
No tape transport control buttons other than the EJECT and STOP buttons will work while the REMOTE button in the remote control setting section is lit. This can be changed with the LOCAL ENABLE menu item *(see page 57)*.

## 4 Display section




**❶ Recording/playback format indicators**
**DVCAM:** This lights when a tape recorded in DVCAM format is played back.
**DV:** This lights when a tape recorded in consumer DV format is played back.
**LP:** This lights when a tape recorded in LP mode is played back.
When a tape recorded in DVCPRO (25M) format or any other format than those mentioned above is played back, none of the above indicators lights.

**Note**
A tape recorded in LP mode cannot be played back correctly. When a tape recorded in LP mode is played back, "DV LP" flashes and audio is muted.

**❷ ClipLink indicator**
Lights when a cassette is loaded on which ClipLink log data is stored in the cassette memory.

*For details of ClipLink log data, see the appendix "ClipLink Guide" (page 104).*

**❸ VITC indicator**
Lights when VITC is being read or recorded regardless of the data shown in the time counter display.

**❹ Time data type indicators**
One of the three indicators (COUNTER, U-BIT, and TC) lights to indicate the type of time data currently shown in the time counter display.
**COUNTER:** Count value of the time counter
**U-BIT:** User bit data
**TC:** SMPTE time code (for DSR-1800) or EBU time code (for DSR-1800P)

**❺ Time counter display**
Indicates the count value of the time counter, time code, VITC, or user bit data depending on the settings of the COUNTER SEL button on the menu control panel and the TC SELECT menu item *(see page 61)*.
Also used to display error messages and setup menu data.

**❻ REC (recording) INHIBIT indicator**
Lights in the following cases:
- The REC/SAVE switch on the loaded cassette is in the SAVE position.
- The REC INHIBIT menu item *(see page 57)* is set to ON.

**❼ Cassette memory indicator**
Lights when a cassette provided with a memory chip ("cassette memory") is loaded.

**❽ SERVO indicator**
This indicator lights when the drum servo and capstan servo are locked*.

* Servo lock: This refers to the synchronization of the phase of the drum rotation and the reference signal for the tape transport position, so that the video heads can trace the same pattern on the tape for playback and recording.

**❾ CHANNEL CONDITION indicators**
These three-color indicators show the state of the playback signal.
**Green:** The state of the playback signal is good.
**Yellow:** The playback signal is somewhat deteriorated, but playback is possible.
**Red:** The playback signal is deteriorated. When the red indicator remains on, head cleaning or an internal inspection is necessary.

**❿ REPEAT indicator**
This indicator lights when the REPEAT MODE menu item *(see page 56)* is set to ON.

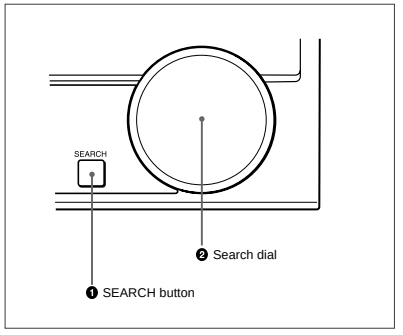
**⓫ Tape end alarm indicator**
Starts flashing when the remaining capacity of the tape is for about 2 minutes.

**⓬ SHUTTLE/JOG indicators**
When searching in shuttle mode using the search dial, the SHUTTLE indicator lights, and when searching in jog mode using the search dial, the JOG indicator lights. When the search dial is turned clockwise causing playback to take place in the forward direction, the ▷ indicator lights. When the search dial is turned counterclockwise causing playback to take place in the reverse direction, the ◁ indicator lights. When the tape is stopped, the □ indicator lights.

*For more information about the search dial, see "Search dial" in the next section.*

**⓭ NOT EDITABLE indicator**
Lights during playback of a tape that contains a recording in other than the DVCAM format. When this indicator is lit, the recordings contained in the tape can be used as source material for editing, but editing operations such as insert editing and assemble editing cannot be performed. This indicator also lights when the audio recording mode selected on this unit does not coincide with that of the loaded tape.

## 5 Search control section




**❶ SEARCH button**
To use the search dial for playback in shuttle or jog mode, press this button, turning it on. Pressing the dial toggles between shuttle and jog modes. In shuttle mode, the SHUTTLE indicator in the display section lights, and in jog mode, the JOG indicator in the display section lights.

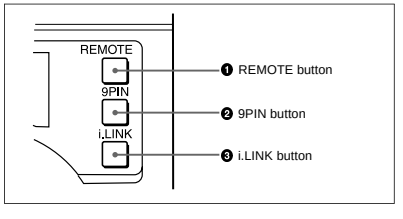
**❷ Search dial**
Turn this to carry out playback in the modes shown in the following table. Turning the dial clockwise lights the ▷ indicator in the display section and plays back in the forward direction. Turning the dial counterclockwise lights the ◁ indicator in the display section and plays back in the reverse direction. When the tape is stopped, the □ indicator in the display section lights.
Pressing this dial toggles playback between shuttle mode and jog mode. When playing back in shuttle mode, the SHUTTLE indicator in the display section lights, and when playing back in jog mode, the JOG indicator lights. You can carry out noiseless playback in the range of $\pm^{1}/_{2}$ times normal speed.

### Playback modes using the search dial

| Playback mode | Operation and functions |
|---|---|
| Shuttle | Press the SEARCH button or the search dial so that the SHUTTLE indicator in the display section lights, then turn the search dial.<br>Playback is carried out at a speed determined by the position of the search dial. The maximum shuttle mode playback speed can be changed with the SHUTTLE menu item *(see page 57)*. |
| Jog | Press the SEARCH button or the search dial so that the JOG indicator in the display section lights, then turn the search dial. Playback is carried out at a speed determined by the speed of rotation of the search dial. The playback speed is up to ±1 times normal speed by factory default.<br>The search dial has no detents. |

You can use the SEARCH ENABLE menu item *(see page 57)* to select either of the following as the operation to be performed to put the unit into search mode (shuttle or jog).
- Either press the SEARCH button or, except during recording/editing, turn the search dial (factory default setting).
- Press the SEARCH button.

## 6 Remote control setting section

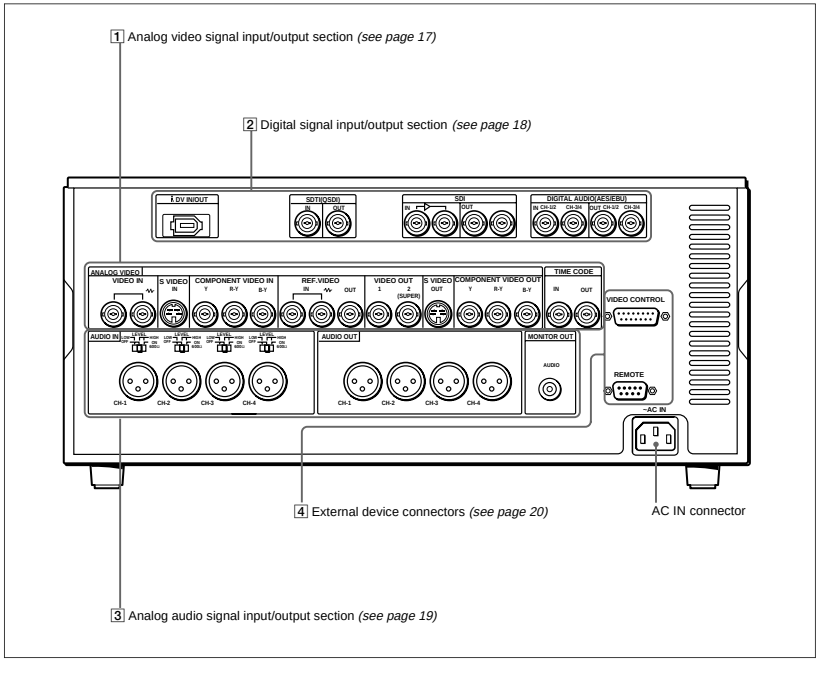



**❶ REMOTE button**
When remote-controlling this unit from the unit connected to the REMOTE connector or i.LINK DV IN/OUT connector, press this button, turning it on.
When reverting to local mode to use the buttons in the tape transport control section, press this button again, turning it off.

**❷ 9PIN button**
When carrying out remote control between this unit and the unit connected to the REMOTE connector, press this button, turning it on.

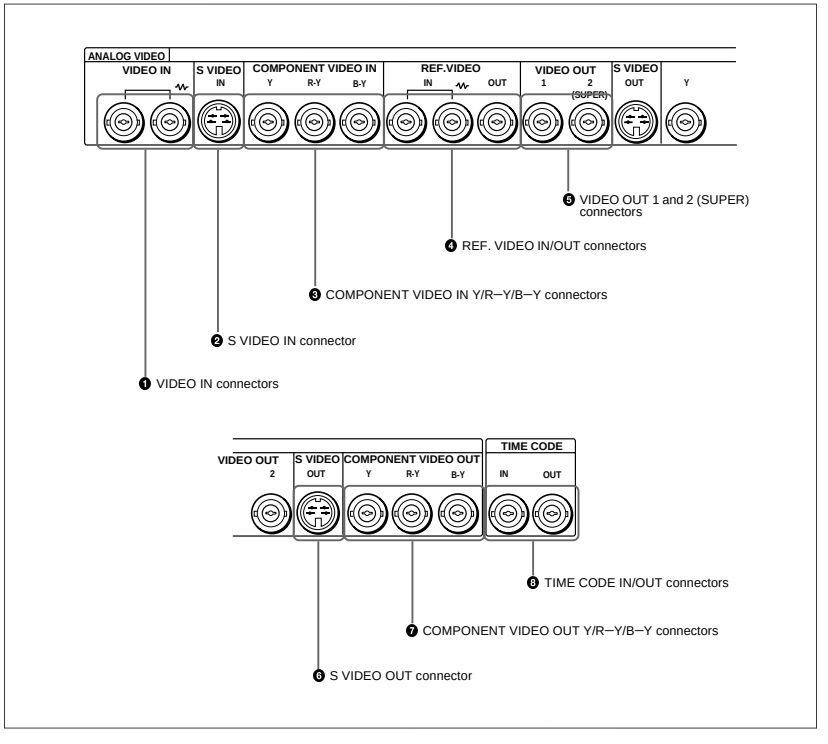
**❸ i.LINK button**
When carrying out remote control between this unit and the unit connected to the i.LINK DV IN/OUT connector, press this button, turning it on. This requires the optional DSBK-1803 board to be installed.

## Rear Panel


1 Analog video signal input/output section (see page 17)
2 Digital signal input/output section (see page 18)
3 Analog audio signal input/output section (see page 19)
4 External device connectors (see page 20)
AC IN connector

**AC IN connector**
Use the supplied power cord to connect this to an AC outlet.

## 1 Analog video signal input/output section


ANALOG VIDEO
VIDEO IN
S VIDEO IN
COMPONENT VIDEO IN Y R-Y B-Y
REF.VIDEO IN OUT
VIDEO OUT 1 2 (SUPER)
S VIDEO OUT
Y
5 VIDEO OUT 1 and 2 (SUPER) connectors
4 REF. VIDEO IN/OUT connectors
3 COMPONENT VIDEO IN Y/R–Y/B–Y connectors
2 S VIDEO IN connector
1 VIDEO IN connectors
VIDEO OUT 2
S VIDEO OUT
COMPONENT VIDEO OUT Y R-Y B-Y
TIME CODE IN OUT
8 TIME CODE IN/OUT connectors
7 COMPONENT VIDEO OUT Y/R–Y/B–Y connectors
6 S VIDEO OUT connector

**❶ VIDEO IN connectors (BNC type)**
Input an analog composite video signal. This connector block has a built-in automatic 75 Ω termination switch. When a signal is input to the left VIDEO IN connector with no bridging (loop-through) connection made, the connector is terminated with an impedance of 75 Ω automatically. To connect the signal input to the left VIDEO IN connector also to other equipment, use the right VIDEO IN connector (marked ⏦). When the right VIDEO IN connector is used, the built-in 75 Ω termination switch turns off automatically.

**❷ S VIDEO IN connector (4-pin)**
Input an S-video signal with separated Y (luminance) and C (chroma: 3.58 MHz for DSR-1800 or 4.43 MHz for DSR-1800P) components to this connector.

**❸ COMPONENT VIDEO IN Y/R–Y/B–Y connectors (BNC type)**
Input analog component video signals (Y/R–Y/B–Y) to these connectors.

**❹ REF. (reference) VIDEO IN/OUT connectors (BNC type)**
Input a reference video signal. The IN connector block has a built-in automatic 75 Ω termination switch. When a signal is input to the left REF. VIDEO IN connector with no bridging (loop-through) connection made, the connector is terminated with an impedance of 75 Ω automatically. To connect the reference video signal input to the left REF. VIDEO IN connector also to other equipment, use the right REF. VIDEO IN connector (marked ⏦). When the right REF. VIDEO IN connector

is used, the built-in 75 Ω termination switch turns off automatically.
The REF. VIDEO OUT connector outputs a reference video signal, except when i.LINK is selected in the INPUT SELECT section *(see page 11)*.

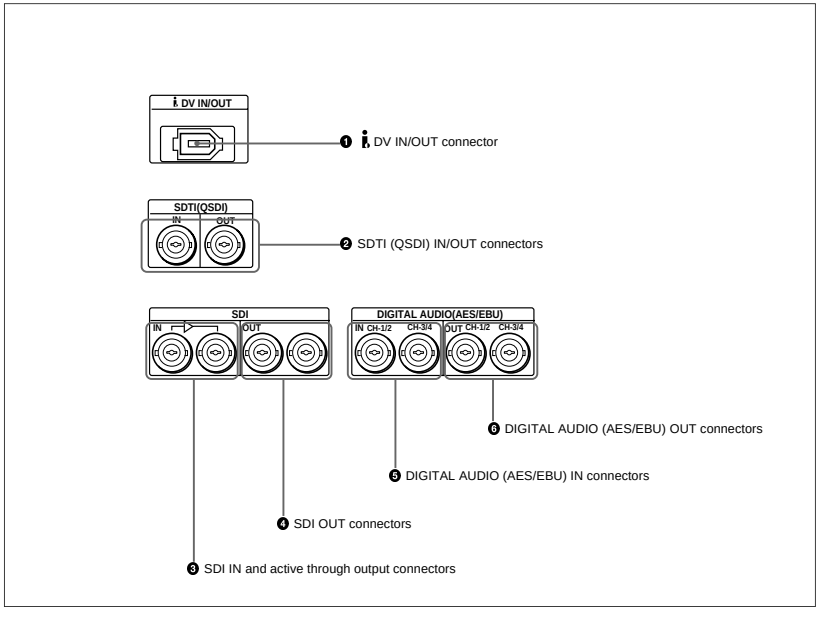
**❺ VIDEO OUT 1 and 2 (SUPER) connectors (BNC type)**
These connectors output analog composite video signals. When the CHARA. DISPLAY menu item *(see page 59)* is set to ON (factory default setting), connector 2 (SUPER) outputs a signal with superimposed text information.

**❻ S VIDEO OUT connector (4-pin)**
This connector outputs an S-video signal with separated Y (luminance) and C (chroma: 3.58 MHz for DSR-1800 or 4.43 MHz for DSR-1800P) components.

**❼ COMPONENT VIDEO OUT Y/R–Y/B–Y connectors (BNC type)**
These connectors output analog component video signals (Y/R–Y/B–Y).

**❽ TIME CODE IN/OUT connectors (BNC type)**
Input SMPTE time code (for DSR-1800) or EBU time code (for DSR-1800P) externally generated to the IN connector.
The OUT connector outputs a time code according to the operating state of the unit, as follows:
During playback: the playback time code
During recording: the time code generated by the internal time code generator or the time code input to the TIME CODE IN connector. When the EE OUT PHASE menu item *(see page 61)* is set to MUTE, no time code is output.

## 2 Digital signal input/output section (optional DSBK-1801/1802/1803 boards required)




**❶ i DV IN/OUT connector (6-pin IEEE-1394) (optional DSBK-1803 i.LINK/DV Input/Output Board required)**
This i.LINK-compatible connector (subsequently referred to also as the i.DV IN/OUT connector) inputs and outputs digital video and audio signals in DV format.

**Note**
When searching at speeds in the range $+^1/_2$ to $+^1/_{30}$ or $-^1/_2$ to $-^1/_{30}$ times normal speed, the audio signal output from this connector and monitored on external equipment may sound differently from the audio signal played back on this unit.

**❷ SDTI (QSDI) (Serial Data Transport Interface (QSDI)) IN/OUT connectors (BNC type) (optional DSBK-1802 SDTI (QSDI) Input/Output Board required)**
The IN connector inputs and the OUT connector outputs digital video and audio signals in SDTI (QSDI) format.

**Note**
When searching at speeds in the range $+^1/_2$ to $+^1/_{30}$ or $-^1/_2$ to $-^1/_{30}$ times normal speed, the audio signal output from this connector and monitored on external equipment may sound differently from the audio signal played back on this unit.

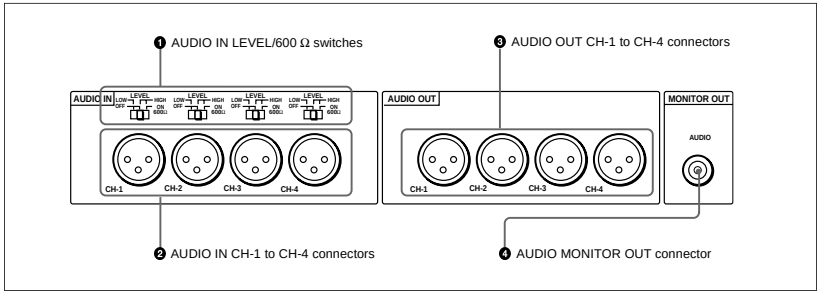
**❸ SDI (Serial Digital Interface) IN (input) and active through output connectors (BNC type) (optional DSBK-1801 SDI/AES/EBU Input/Output Board required)**
Input digital video and audio signals in SDI format to the left-hand connector. The right-hand connector is for an active-through connection.

**❹ SDI (Serial Digital Interface) OUT connectors (BNC type) (optional DSBK-1801 SDI/AES/EBU Input/Output Board required)**
Output SDI-format digital video and audio signals. The same signals are output from both connectors.

**❺ DIGITAL AUDIO (AES/EBU) IN connectors (BNC type) (optional DSBK-1801 SDI/AES/EBU Input/Output Board required)**
Input digital audio signals in AES/EBU format to these connectors.
The left-hand connector (CH-1/2) is for audio channels 1 and 2, and the right-hand connector (CH-3/4) is for audio channels 3 and 4.

**❻ DIGITAL AUDIO (AES/EBU) OUT connectors (BNC type) (optional DSBK-1801 SDI/AES/EBU Input/Output Board required)**
These connectors output digital audio signals in AES/EBU format.
The left-hand connector (CH-1/2) is for audio channels 1 and 2, and the right-hand connector (CH-3/4) is for audio channels 3 and 4.

## 3 Analog audio signal input/output section




**❶ AUDIO IN LEVEL/600 Ω switches**
Set these switches for each channel as shown in the following table, according to the audio input levels to the AUDIO IN CH-1 to CH-4 connectors and the required impedance.

**Settings of the AUDIO IN LEVEL/600 Ω switches**

| Audio input | | Switch setting |
|---|---|---|
| **Level** | **Impedance** | |
| –60 dBu (microphone input) | High impedance (about 20 kΩ) | LOW-OFF (left position) |
| +4/0/–3 a)/–6 dBu (line audio input) | High impedance (about 20 kΩ) | HIGH-OFF (middle position) |
| +4/0/–3 a)/–6 dBm (line audio input) | 600 Ω | HIGH-ON (right position) |

a) Selectable on DSR-1800P only

**❷ AUDIO IN CH-1 (channel 1) to CH-4 connectors (XLR 3-pin, female)**

Use these connectors to connect separate channels of analog audio input from a player VCR or other external audio equipment.
You can switch the audio input level setting with the LEVEL SELECT menu item *(see page 64)*.

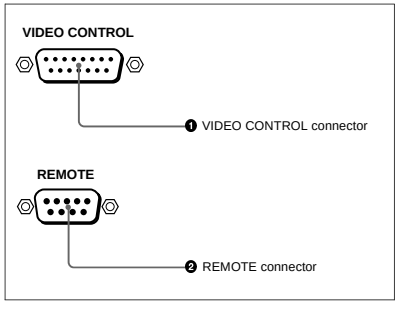
**❸ AUDIO OUT CH-1 (channel 1) to CH-4 connectors (XLR 3-pin, male)**

These connectors output channel-1 to channel-4 analog audio signals, respectively.
It is possible to use the AUDIO OUT CH-3 and AUDIO OUT CH-4 connectors for audio monitor output for channels 1 and 2, respectively (use the OUTPUT CH3/4 menu item *(see page 65)*).

**❹ AUDIO MONITOR OUT connector (RCA phono jack)**

This connector outputs audio signals for monitoring. The audio signals to be output from this connector can be selected with the MONITOR SELECT switches on the menu control panel.

### 4 External device connectors




**❶ VIDEO CONTROL connector (D-sub 15-pin)**

For remote control of the internal digital video processor, connect an optional remote control unit such as the UVR-60/60P or BVR-50/50P to this connector.

**❷ REMOTE connector (D-sub 9-pin)**

When controlling this unit from an editing control unit such as the ES-3, ES-7, PVE-500, BVE-600/800/910/2000, or RM-450/450CE, connect the unit to the editing control unit via this connector using the optional 9-pin remote control cable.



# *Recording and Playback* Chapter 2

## Usable Cassettes

This unit can use the DVCAM cassettes listed below.

| Model name | Size |
|---|---|
| PDV-64ME/94ME/124ME/184ME | Standard size |
| PDVM-12ME/22ME/32ME/40ME | Mini size |

The numbers in each model name indicate the maximum recording/playback time (in minutes) for each model. For example, the PDV-184ME has a maximum recording/playback time of 184 minutes.

### Cassettes usable for playback only

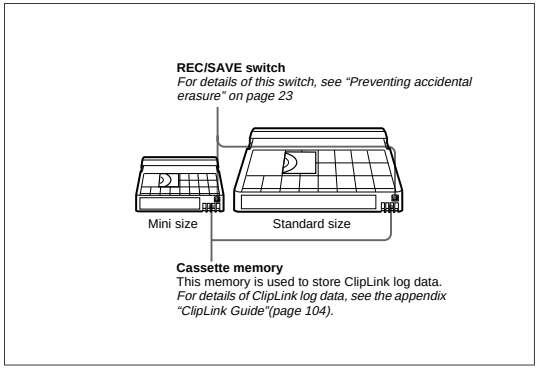
All consumer DV cassettes and large- and medium-size DVCPRO (25M) cassettes are usable for playback only.

**Notes**

- If you insert an incorrect type of cassette, it will be automatically ejected.
- When operating this unit as a player, you can also use DV cassettes on the unit. However, it is the best choice to always use DVCAM cassettes because they are more reliable than DV cassettes whatever your purpose may be: playback, editing, or long-period storage of recordings.
- Cassettes that have been recorded by a DV-format recorder can be played back on this unit but cannot be used for recording at editing operation. When you insert such a cassette into this unit, the NOT EDITABLE indicator lights up in the display section on the front panel of this unit.

### DVCAM cassettes

The following figure illustrates the DVCAM cassettes.


REC/SAVE switch
For details of this switch, see "Preventing accidental erasure" on page 23
Mini size
Standard size
Cassette memory
This memory is used to store ClipLink log data.
For details of ClipLink log data, see the appendix "ClipLink Guide"(page 104).

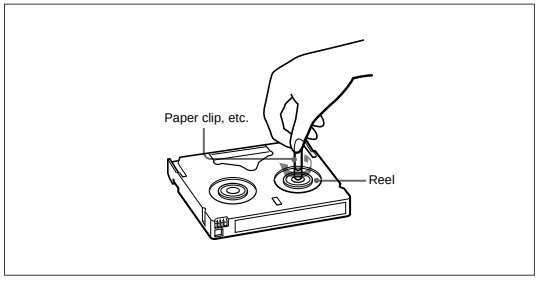
### Notes on using cassettes

- Before storing the cassette for a long period of time, rewind the tape to the beginning and be sure to put the cassette in its storage case, preferably on end instead of flat on its side.
  Storing a cassette in any other condition (not rewound, out of its case, etc.) may cause the video and audio contents to become damaged over time.
- If the cassette memory connector (contact point) becomes dirty, connection problems may occur, causing a loss of functions. Remove away any dust or dirt from this area before using the cassette.
- If the cassette is dropped on the floor or otherwise receives a hard impact, the tape may become slackened and may not record and/or play back correctly.

*For information about how to check the tape for slack, see the next section.*

### Checking the tape for slack

Using a paper clip or a similar object, turn the reel gently in the direction shown by the arrow. If the reel does not move, there is no slack. Insert the cassette into the cassette compartment, and after about 10 seconds take it out.





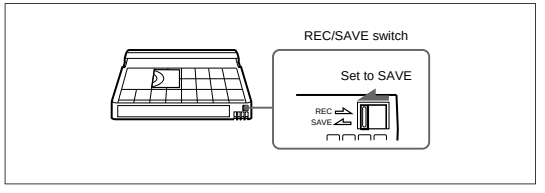







### Preventing accidental erasure

Set the REC/SAVE switch on the cassette to SAVE to prevent accidental erasure of recorded contents.

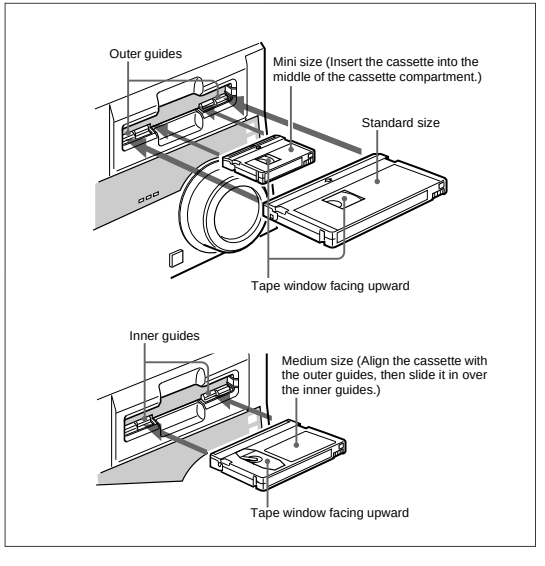



**To enable re-recording**
Set the REC/SAVE switch to REC.
When this switch is set to SAVE, the unit cannot record on the tape.

## Inserting and Ejecting Cassettes

### Inserting a cassette

This unit accepts three sizes of cassette: L (standard size), M (medium size: DVCPRO) and S (mini size). When inserting a cassette in the unit, make sure its tape window faces upward as shown in the following figure.


Outer guides
Mini size (Insert the cassette into the middle of the cassette compartment.)
Standard size
Tape window facing upward
Inner guides
Medium size (Align the cassette with the outer guides, then slide it in over the inner guides.)
Tape window facing upward

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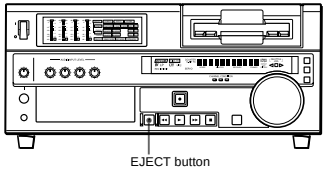
### No double insertion of cassettes

When you insert a cassette, the orange lock-out plate appears in the cassette compartment to prevent double insertion.

### Ejecting a cassette

Press the EJECT button.





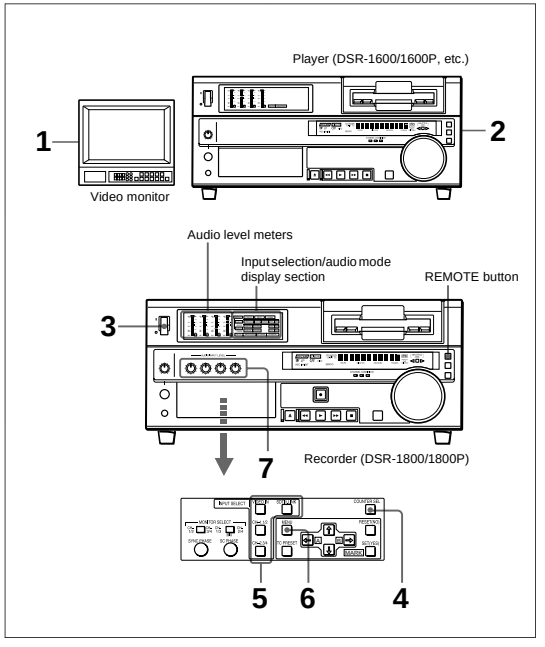

# Recording

This section describes the necessary settings and operations to perform recording on this unit. The same settings and operations apply whether you are using the unit as part of an editing system, for dubbing*, or as a stand-alone recorder.

* For dubbing of SDTI (QSDI) format signals, use the AUTO FUNCTION menu item SDTI (QSDI) DUBBING *(see page 69). For details, see "Digitally Dubbing Signals in DVCAM Format" on page 50.*

*For the necessary connections for recording and the settings not covered in this section, see Chapter 5 "Connections and Settings."*

## Settings for Recording




**Note**

When controlling this unit from an editing control unit connected to the REMOTE connector, see "Remote control setting section" *(page 15)*.

**1** Power on the video monitor, then set its input switches according to the signals input from this unit.

**2** Set up the player to play back a tape.

*For details, refer to the operating instructions for the player.*

**3** Power on this unit by pressing on the | side of the POWER switch.

**4** When the REMOTE button is not lit (the external editing control unit is not used), use the COUNTER SEL button to select the type of time data to be used.

Each press of this button cycles through three options: COUNTER (CNT value), TC (time code), and U-BIT (user bit data). The time data type indicator for each option lights as it is selected.

| Selected time data | Time data type indicator |
|---|---|
| Count value of the time counter | COUNTER |
| Time code | TC |
| User bit data | U-BIT |

When the REMOTE button is lit, selection of the time data type is carried out at the editing control unit.

**5** Select the formats of video and audio input signal to be recorded.
Use the buttons in the INPUT SELECT section to select the desired signal formats. Each selection is shown by a lit indicator in the input selection/audio mode display section.

| Video input signal (input connector) | Corresponding button in the INPUT SELECT section | Lit indicator in the input selection/audio mode display section |
|---|---|---|
| Composite signal (VIDEO IN) | VIDEO IN | COMPOSITE in VIDEO group |
| Separated Y/C signal (S VIDEO IN) | VIDEO IN | S VIDEO in VIDEO group |
| Component signal (COMPONENT VIDEO IN) | VIDEO IN | Y–R, B in VIDEO group |
| SDI signal (SDI IN) | VIDEO IN | SDI a) in VIDEO group |
| SDTI (QSDI) signal (SDTI (QSDI) IN) | SDTI/i.LINK | SDTI a): both SDTI video and audio input signals are recorded.<br>V:SDTI a): only SDTI video input signal is recorded. |
| i.LINK-compatible digital video signal in DV format (i.DV IN/OUT) | SDTI/i.LINK | i.LINK a) |
| Internal test video signal | VIDEO IN | SG in VIDEO group |

a) The indicator does not light even if you press the corresponding button in the INPUT SELECT section unless the required optional digital input/output board (DSBK-1801/1802/1803) is installed.





| Audio input signal (input connector) | Corresponding button in the INPUT SELECT section | Lit indicator in the input selection/audio mode display section |
|---|---|---|
| Analog signal (AUDIO IN CH-1 to CH-4) | CH-1,1/2 and CH-2,3/4 | ANALOG in AUDIO group |
| AES/EBU signal (DIGITAL AUDIO (AES/EBU) IN) | CH-1,1/2 and CH-2,3/4 | AES/EBU a) in AUDIO group |
| SDI signal (SDI IN) | CH-1,1/2 and CH-2,3/4 | SDI a) in AUDIO group |
| SDTI (QSDI) signal (SDTI (QSDI) IN) | SDTI/i.LINK | SDTI a) |
| i.LINK-compatible digital audio signal in DV format (i.DV IN/OUT) | SDTI/i.LINK | i.LINK a) |
| Internal test audio signal | CH-1,1/2 and CH-2,3/4 | SG in AUDIO group |

a) The indicator does not light even if you press the corresponding button in the INPUT SELECT section unless the required optional digital input/output board (DSBK-1801/1802/1803) is installed.

**Caution**

Once you have started recording, you cannot change the input signal selection.

**6** Select the audio mode.
Select either two-channel mode (2CHANNEL) or four-channel mode (4CHANNEL) with the REC MODE menu item *(see page 63)*. The corresponding indicator lights in the REC MODE display.

| Audio mode | Lit indicator in the REC MODE display |
|---|---|
| 2-channel mode | 2CH |
| 4-channel mode | 4CH |

**Cautions**

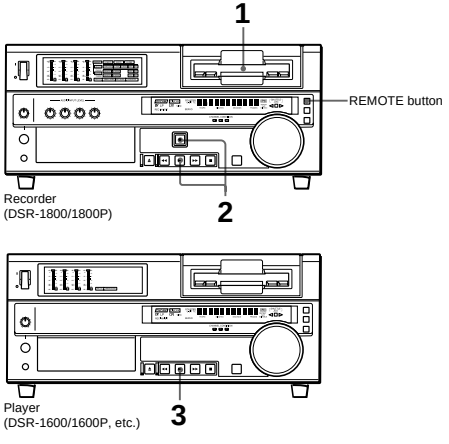
- In the DVCAM format, there are two audio recording modes, with either two channels at 48 kHz or four channels at 32 kHz. It is not possible to select other modes (for example with four channels at 48 kHz).
- During audio editing, if a signal used in assemble or insert editing is in a different mode from the base tape, the signals will be discontinuous at the edit points, and correct editing will not be obtained. For this reason, audio editing between different modes is inhibited on this unit.
  For smooth editing operations, check the audio recording mode of the base tape beforehand.
- Once you have started recording, you cannot change the audio mode selection.
- If on a tape there is a point where the audio mode is switched, it is not possible to carry out insert editing over a section including that point.

**7** Use the AUDIO INPUT LEVEL control knobs to adjust audio input levels. Watching the audio level meter, adjust the level so that the meter does not indicate higher values than 0 dB when the audio signal is at its maximum. When the level exceeds 0 dB, the OVER indicator lights.

The factory-preset audio recording level is –20 dB (DSR-1800) or –18 dB (DSR-1800P). This setting can be changed using the LEVEL SELECT menu item *(see page 64)*.

## Recording Procedure

This section describes the procedure to perform recording on this unit, showing an example session in which playback signals coming from a player VCR will be recorded on the tape loaded in the unit.




**Notes**

- When controlling this unit from an editing control unit connected to the REMOTE connector of this unit, press the REMOTE button to turn it on. When not, turn off the button.
- If you intend to use a tape recorded on this unit in a system comprising a DSR-85/85P and an ES-7 EditStation, it is recommended to record color bars on at least the first 40 seconds of the tape.
  When transferring digital signals from the DSR-85/85P to the ES-7 EditStation at four times normal speed, there must be recording for approximately 40 seconds before the IN point.



**1** After checking the following items, hold the cassette with the tape window facing upward, then insert it into the recorder (this unit) as illustrated on *page 23*.

| Item to check | See section |
|---|---|
| Make sure that the REC/SAVE switch of the cassette is set to REC. | *"Preventing accidental erasure" on page 23* |
| Check for tape slack. | *"Checking the tape for slack" on page 22* |
| Make sure that the "HUMID!" alarm is not shown in the time counter display. | *"Condensation" on page 91* |

The cassette is automatically drawn into the unit and the tape is wound round the head drum. The tape is stationary while the head drum rotates, and the STOP button lights.

**If the REC INHIBIT indicator lights:**
It indicates that the REC/SAVE switch of the loaded cassette has been set to SAVE. Press the EJECT button in the tape transport control section to remove the cassette, then set the REC/SAVE switch to REC and reload the cassette.

**Note**
When ejecting and loading cassettes, make sure that the unit has been powered on.

**2** Hold down the REC button and press the PLAY button.

This puts the unit into recording mode, and the tape starts moving.

**3** Press the PLAY button on the player.

The player starts the playback operation, at which point this unit starts recording the input playback signals.

**Cautions**

- Once you have started recording, you cannot change the audio mode selection.
- If on a tape there is a point where the audio mode is switched, it is not possible to carry out insert editing over a section including that point.

**If the following indicators light when a cassette is loaded**

| Indicator | It means: |
|---|---|
| Cassette memory indicator | The loaded cassette contains a cassette memory. |
| ClipLink indicator | There is ClipLink log data stored in the cassette memory on the loaded cassette.<br><br>**Caution**<br>With such a cassette, carrying out recording destroys the ClipLink log data. |
| NOT EDITABLE indicator | The recording format of the tape is "DV," or a DVCPRO tape is inserted.<br>Replace the tape with one that has been recorded in DVCAM format. |
| | The audio recording mode selected on this unit does not coincides with that of the tape.<br>• When your current purpose is recording, you can use the tape as it is.<br>• When your current purpose is editing, set the unit for the same audio recording mode as with the tape.<br>*For more details, see "Troubleshooting" on page 94.* |

**To perform the following operations**

| Operation | Do this: |
|---|---|
| Stop recording. | Press the STOP button.<br>The unit enters stop mode, and will automatically switch to standby off mode after the time period set with the STOP TIMER menu item *(see page 62).* |
| Remove the cassette. | Press the EJECT button.<br>After a few seconds, the tape is unwound from the head drum and the cassette is automatically ejected. If a CNT value is shown on the time counter display (assuming the time data type indicator "COUNTER" is lit), the CNT value is reset. |
| Inhibit the unit from outputting text information (time data, operation mode indications, etc.) to the video monitor. | Set the CHARA. DISPLAY menu item *(see page 59)* to OFF. |
| Change the time period before the unit switches from stop mode to standby off mode. | Change the setting of the STOP TIMER menu item *(see page 62).* |







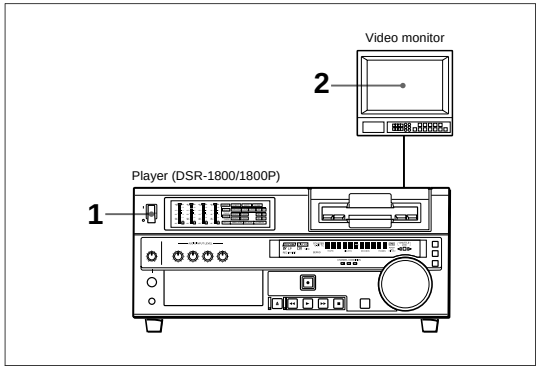


# Playback

This section describes the settings and operations necessary to perform playback on this unit. The same settings and operations apply whether you are using the unit as part of an editing system, for dubbing, or as a stand-alone player VCR.

*For the necessary connections for playback and the settings not covered in this section, see Chapter 5 "Connections and Settings."*

## Settings for Playback

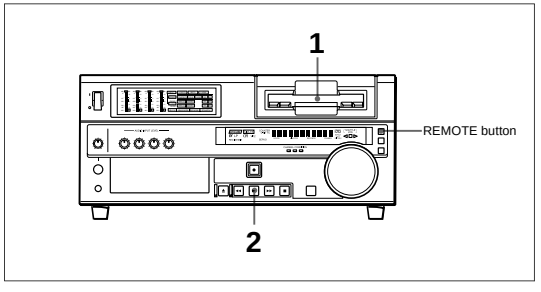



**1** Power on this unit by pressing on the | side of the POWER switch.

**2** Power on the video monitor and set its switches as shown below.

| Switch | Setting |
|---|---|
| 75 Ω termination switch | ON (or attach a 75 Ω terminator.) |
| Input switch | Set according to the type of input signal from this unit. |

## Playback Procedure




**Note**

When controlling this unit from an editing control unit connected to the REMOTE connector of this unit, press the REMOTE button turning it on. When not, turn off the button.

**1** Insert a cassette.

*For details of cassette insertion see page 23, and for usable cassette types see page 21.*

The cassette is automatically drawn into the unit. The STOP button will light, and a few seconds later a still image will appear on the monitor screen.

**2** Press the PLAY button.

This starts the playback operation. When the tape is played back all the way to the end, the unit automatically rewinds it and then stops.



**If the following indicators light when a cassette is loaded**

| Indicator | It means: |
|---|---|
| Cassette memory indicator | The loaded cassette contains a cassette memory. |
| ClipLink indicator | There is ClipLink log data stored in the cassette memory on the loaded cassette. |
| NOT EDITABLE indicator | The tape was recorded in the DV format, or a DVCPRO tape is inserted.<br>You cannot use it as a recording tape for editing. |

**To perform the following operations**

| Operation | Do this: |
|---|---|
| Stop playback. | Press the STOP button.<br>The unit enters stop mode, and will automatically switch to standby off mode after the time set with the STOP TIMER menu item *(see page 62).* |
| Adjust the audio playback level. | Use the audio level control on the monitor. |
| Play back in shuttle mode while monitoring the video. | Press the SEARCH button or search dial to light the SHUTTLE indicator in the display section, then rotate the search dial.<br>Playback is carried out at the speed determined by the angular position of the search dial.<br>The maximum speed for shuttle playback can be changed using the SHUTTLE menu item *(see page 57).* |
| Play back in jog mode while monitoring the video. | Press the SEARCH button or search dial to light the JOG indicator in the display section, then rotate the search dial.<br>Playback is carried out at the speed according to the speed of the search dial rotation. The playback speed range is ±1 times normal speed by factory default.<br>The search dial has no detents. |
| Inhibit the unit from outputting text information (time data, operation mode indications, etc.) to the video monitor. | Set the CHARA. DISPLAY menu item *(see page 59)* to OFF. |
| Remove the cassette. | Press the EJECT button.<br>If a CNT value is shown on the time counter display, the CNT value is reset. |
| Disable the automatic rewind function. | Set the AUTO REW menu item *(see page 58)* to DISABLE. |
| Change the time period before the unit switches from stop mode to standby off mode. | Change the setting of the STOP TIMER menu item *(see page 62).* |

## Repeat Playback—Automatic Cyclical Playback

Proceed as follows to perform automatic cyclical playback of recording (repeat playback) between selected start and end points.

**1** Set the desired repeat start and end points with the REPEAT FUNCTION menu item *(see page 56)*.
You can set points A and B as start and end points by following the procedure described in the next section.

**2** Set the REPEAT MODE menu item *(see page 56)* to ON.

The REPEAT indicator lights.

**3** Press the SET (YES) button to save the new setting and close the menu.

**4** Press the PLAY button.

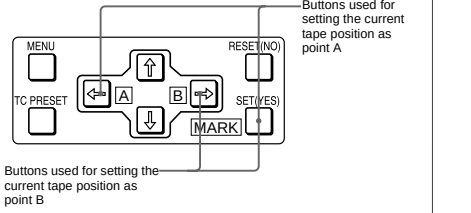
The unit repeats playback between the repeat start and end points set in step **1**.

## Setting Points A and B for Repeat Playback

You can set the repeat playback start point (point A) and end point (point B) by using the current tape position or inputting time code values.
To perform repeat playback after setting points A and B, press the PLAY button when the REMOTE button is off. When the DSRM-10 Remote Control Unit is connected to the CONTROL S connector on the front panel, you can also start repeat playback by pressing its PLAY button with the REMOTE button of this unit off.

### Setting the current tape position as point A or B

Proceed as follows to set the current tape position as point A or B for repeat playback.




In the following explanation of how to set points A and B for repeat playback, these three buttons are referred to as the ⇦A button, B⇨ button, and SET (YES) MARK button, respectively.

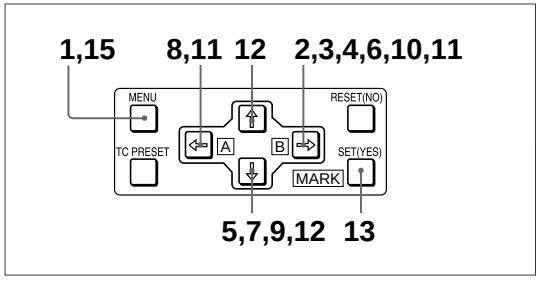
While holding down the SET (YES) MARK button on the menu control panel, press the ⇦A or B⇨ button. The time code value of the current tape position is set as point A or B, and a message “A set” or “B set” is displayed for 0.5 second in the time counter display.
Once set, the point A or B time code value is held in the non-volatile memory of the unit until changed. It is not lost when the unit is powered off.

**Note**
When setting point A or B, you can only use a time code value. Even when COUNTER is selected with the COUNTER SEL button, you cannot use a CNT value to set point A or B.

**To check the point A or B time code value**
Press the ⇦A or B⇨ button on the menu control panel. While the button is held down, the point A or B time code value is displayed on the monitor and in the time counter display.
If you hold down the ⇦A and B⇨ buttons simultaneously, the value shown is the point B time code value minus the point A time code value. If the point A time code value is greater than the point B time code value, a minus sign (–) is shown before the value.

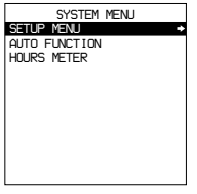
### Inputting time code values for points A and B

Using the following procedure, you can modify the time code value for point A or B.

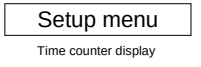



**1** Press the MENU button.

The following menu display appears.




Monitor screen




Time counter display

**2** With “SETUP MENU” selected, press the B⇨ button.

The display changes as follows.

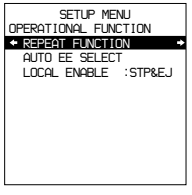
Monitor screen

Operational

Time counter display

**3** With “OPERATIONAL FUNCTION” selected, press the B⇨ button.

The display changes as follows.



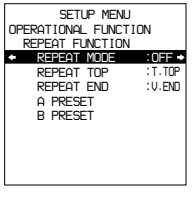

Monitor screen

>REP FUNC

Time counter display

**4** With “REPEAT FUNCTION” selected, press the B⇨ button.

The contents of the REPEAT FUNCTION menu item are displayed.



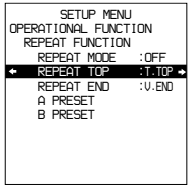

Monitor screen

>> REPEAT MD

Time counter display



**5** Press the ⇩ button to select “REPEAT TOP.”



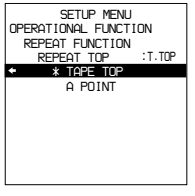

Monitor screen

>> REP TOP

Time counter display

**6** Press the B⇨ button.

The display changes as follows.

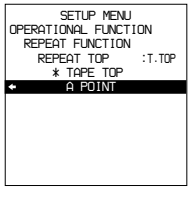



Monitor screen

>>> Tape top

Time counter display

**7** Press the ⇩ button to select “A POINT.”



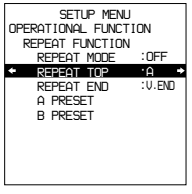

Monitor screen

>>> A point

Time counter display

**8** Press the ⇦A button.

The display changes as follows.

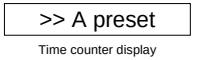



Monitor screen

Time counter display

**9** Press the ⇩ button to select "A PRESET."

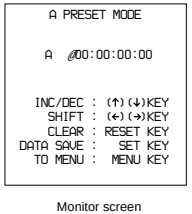
Monitor screen




Time counter display

**10** Press the B⇨ button.

The A PRESET MODE screen appears. The time code value of the current point A is displayed below the screen title.




Monitor screen

**11** Use the ⇦A or B⇨ button to select the digit in the time code value display that you want to change.

Each press of the button causes the digit to the left or right to begin flashing. Holding the button down moves the flashing digit continuously.
If you want to clear the time code value, press the RESET (NO) button. The value is cleared to 00:00:00:00, and the leftmost digit begins flashing.







**12** Press the ⇧ or ⇩ button to increment or decrement the value of the flashing digit.

Each press of the button increments or decrements the value. Holding the button down increments or decrements the value continuously. To change other digits, return to step **11**.

**13** Press the SET (YES) MARK button to confirm the defined value.

The message "NOW SAVING..." is displayed on the monitor screen and "Saving..." is shown in the time counter display while the new setting is being saved in memory.

**Caution**

The new setting may be lost if you power off the unit during the saving operation. Wait until the saving operation is completed before powering the unit off.

**If you want to discard the changed value**

Press the MENU button instead of pressing the SET (YES) MARK button to return to the menu display, then press the MENU button again to end the menu operation without saving the changed value into memory.

After the saving operation is completed, the monitor screen and time counter display return to the REPEAT FUNCTION setting display as shown in step **9**.

**14** To set point B, refer to steps **5** to **13**. (Select "REPEAT END" in step **5**, "B POINT" in step **7,** and "B PRESET" in step **9**.)

**15** Press the MENU button to close the menu.

## Cuing Up to Any Desired Position Set as Point A or B

You can set any desired tape position as point A or B and cue up to the set point when required. To cue up to point A or B, holding down the ⇦A or B⇨ button on the menu control panel, press the REW button in the tape transport control section.

*For the methods of setting points A and B, see the previous section.*

# Chapter 3 Convenient Functions for Editing Operation

## Setting the Time Data

This unit is provided with the following functions related to time data.
- Display and reset CNT value
- Set, display, record, and play back SMPTE/EBU time code and user bit data
- Set, display, record, and play back VITC

The unit can output the time code read from the tape as an analog (LTC) signal while in normal-speed playback mode, and receive an external analog time code (LTC) signal.

**Note**
The unit outputs no signal from the TIME CODE OUT connector unless it is in normal-speed playback mode.

The following explains how to use these functions.

### Displaying Time Data and Operation Mode Indications

Time data and operation mode indications can be displayed on the monitor screen.
Time data can also be displayed in the time counter display on this unit.

#### To view time data and operation mode indications on the monitor screen

Set the CHARA. DISPLAY menu item *(see page 59)* to ON (factory default setting).
The time data and the indication of the current operation mode are superimposed on the video signal that is being output from the VIDEO OUT 2 (SUPER) connector, and can be viewed on the monitor screen.

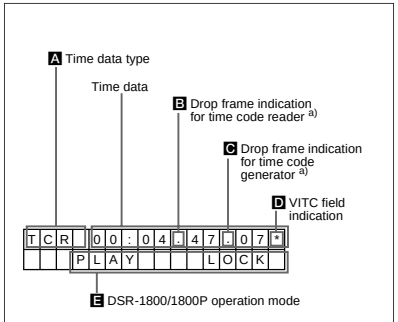
Use the DISPLAY CONTROL menu items *(see page 59)* to select the information displayed and the character type and position of the indications.

When you set the SUB STATUS menu item *(see page 59)* to other than OFF, you can also display supplementary status information on the monitor screen such as editing mode settings and the operating mode of the internal time code generator.

*For details of supplementary status information, see "Displaying Supplementary Status Information" on page 74.*

### Monitor screen contents

The contents of the monitor screen are shown below.


A Time data type
Time data
B Drop frame indication for time code reader a)
C Drop frame indication for time code generator a)
D VITC field indication
TCR 00:04.47.07*
PLAY LOCK
E DSR-1800/1800P operation mode

a) This character (.) can appear on the DSR-1800 only. The character to appear in these two columns is always a colon ( : ) on the DSR-1800P.

### A Time data type

The following time data type indications are displayed.

| Indication | Description |
|---|---|
| CNT | Count value of the time counter |
| TCR | Time code data from time code reader (factory default setting) |
| UBR | User bit data from time code reader |
| TCR. | Time code data from VITC reader a) |
| UBR. | User bit data from VITC reader a) |
| TCG | Time code data from time code generator |
| UBG | User bit data from time code generator |
| T*R b) | Time code data from time code reader. The asterisk indicates an interpolation by the time code reader to make up for the time code data not correctly read from the tape. |
| U*R b) | User bit data from the time code reader. The asterisk indicates that last data is retained by the time code reader, as the new data has not been read correctly from the tape. |

a) You can switch between TC and VITC using the TC SELECT menu item *(see page 61)*.
b) "*" is displayed when data cannot be read in correctly.

### B Drop frame indication for time code reader (on DSR-1800 only)

| | |
|---|---|
| . | Drop frame mode (factory default setting) |
| : | Non-drop frame mode |

### C Drop frame indication for time code generator (for DSR-1800 only)

| | |
|---|---|
| . | Drop frame mode (factory default setting) |
| : | Non-drop frame mode |

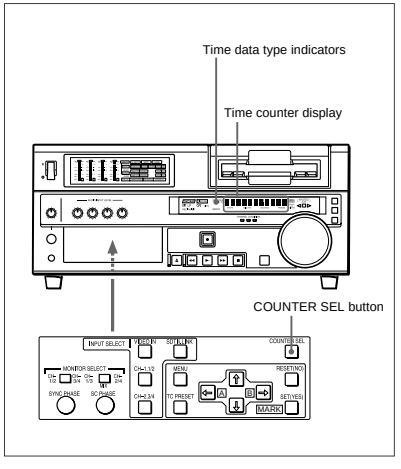
### D VITC field indication

| | |
|---|---|
| (blank) | Display fields 1 and 3. |
| * | Display fields 2 and 4. |

### E DSR-1800/1800P operation mode

| Display | Operation mode |
|---|---|
| CASSETTE OUT | Cassette is not loaded. |
| THREADING | Tape loading |
| UNTHREADING | Tape unloading |
| STANDBY OFF | Standby off mode |
| T. RELEASE | Tape tension released |
| STOP | Stop mode |
| F. FWD | Fast forward mode |
| REW | Rewind mode |
| PREROLL | Preroll mode |
| PLAY | Playback mode (servo unlocked) |
| PLAY LOCK | Playback mode (servo locked) |
| PLAY-PAUSE | Temporary stop of playback |
| REC | Record mode (servo unlocked) |
| REC LOCK | Record mode (servo locked) |
| REC-PAUSE | Temporary stop of recording |
| EDIT | Edit mode (servo unlocked) |
| EDIT LOCK | Edit mode (servo locked) |
| JOG STILL | Still picture in jog mode |
| JOG FWD | Jog mode in forward direction |
| JOG REV | Jog mode in reverse direction |
| SHUTTLE (Speed) | Shuttle mode |
| AUTO EDIT | Automatic editing mode |
| PREVIEW | Preview mode |
| REVIEW | Review mode |

### To display the desired time data in the time counter display




Open the door on the lower part of the front panel, and press the COUNTER SEL button.
Each press of this button cycles through three options: CNT value, time code, and user bit data. The time data type indicator for each option lights as it is selected.

| Time data type indicator | Time data shown in the time counter display |
|---|---|
| COUNTER | CNT (count value of the time counter) |
| TC | Time code (when recording, the time code is generated by the internal time code generator; when playing back, the time code is read from the tape.) |
| U-BIT | User bit data (when recording, the user bit data is according to the most recent settings; when playing back, the user bit data is read from the tape.) |

**Note**

When the REMOTE button on the front panel is lit, the COUNTER SEL button does not operate while the tape is moving. In such cases, use the external equipment connected to the REMOTE connector on the rear panel to select the time data.

### To reset the CNT value

Press the RESET (NO) button on the menu control panel. This resets the CNT value to 0:00:00:00.

**Note**

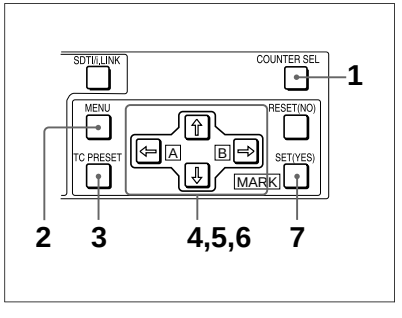
During playback, if the recording on the tape includes discontinuities, the counter may operate incorrectly at the corresponding points.

## Using the Internal Time Code Generator

You can set the initial time code value before recording the time code generated by the internal time code generator onto a tape. In addition, you can use the user bits to record such data as the date, time, scene number, reel number, or other useful information.

When an external time code generator is connected to the TIME CODE IN connector, the internal time code generator can be locked to (synchronized with) an external time code.

### To set the initial time code value and user bit data




**1** Press the COUNTER SEL button to light the time data type indicator "TC" or "U-BIT."
**TC:** To set the initial time code value.
**U-BIT:** To set user bit data

The current time code value or user bit data is shown in the time counter display.

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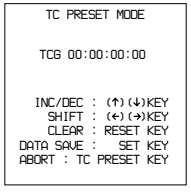
**2** Set the TIME CODE menu items *(see page 60)* as shown below.

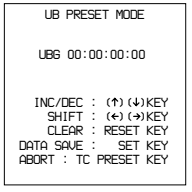
| Menu item | Setting |
|---|---|
| TC MODE | "INT PRESET" |
| RUN MODE | "FREE RUN" or "REC RUN" |
| DF MODE (for DSR-1800 only) | Normally "ON (DF)" |

**3** Press the TC PRESET button on the menu control panel.

The current setting is shown on the monitor screen and in the time counter display on the front panel. The leftmost digit keeps flashing.
One of the following menu screens is displayed on the monitor depending on the setting made in step **1**.




Initial time code value setting screen




User bit setting screen

**Note**

If you press the TC PRESET button while CNT value is being displayed, the message "COUNTER MODE IS SELECTED." will appear on the monitor screen and "CNT mode!" will appear in the time counter display on the front panel. If this happens, press the COUNTER SEL button to light the time data type indicator "TC" or "U-BIT."

**4** Use the ⇦ and ⇨ buttons to move the flashing digit to the value to be changed.

**5** Use the ⇧ and ⇩ buttons to change the value of the flashing digit.

Enter hexadecimal values (0 to 9, A to F) when setting user bit data.

**6** Repeat steps **4** and **5** until you have set the desired values for all digits.
To set a value of 00:00:00:00, simply press the RESET (NO) button.

**7** Press the SET (YES) button.

The message "NOW SAVING..." appears on the monitor screen, "Saving..." appears in the time counter display, and the new settings are stored in memory. After this saving operation is completed, the monitor screen and the time counter display return to their usual status.

**Note**

The set data may be lost if you power off the unit while the above saving operation is in progress. Wait until the saving operation is completed before powering off.

### Advancement of internal time code generator

The internal time code generator can advance in either of two modes, which can be set with the RUN MODE menu item *(see page 60)*.
**FREE RUN:** Advancement starts when the data saving operation is completed.
**REC RUN:** Advancement starts when recording starts and stops when recording stops.

### To set the current time as the initial time code value

In step **2** above, set the RUN MODE menu item to FREE RUN, then set the current time (format: HH:MM:SS:FF = hours: minutes:seconds:frame number) in step **3** and subsequent steps.

## Synchronizing Internal and External Time Codes

The internal time code generator can be synchronized with an external time code (LTC) input to this unit.

### To synchronize the internal time code to external time code

Input an external time code (LTC) signal to the TIME CODE IN connector, then set the TC MODE menu item *(see page 60)* to EXT REGEN.
The internal time code generator locks onto the external time code and starts advancing. Once the internal time code generator has been synchronized in this way, you can disconnect the external time code input and this unit will maintain the synchronized time code.

**Note**

When the selected input mode is "SDTI" or "i.LINK" (the SDTI or i.LINK indicator is lit in the INPUT display), setting the TC MODE menu item *(see page 60)* to EXT REGEN causes the internal time code generator to automatically synchronize with the external time code input to the unit via the SDTI or i.LINK interface.

Once an external time code signal has been input, the internal time code advancement mode and frame count mode are automatically set as follows:
**Advancement mode:** FREE RUN
**Frame count mode:** Same as external time code (drop frame or non-drop frame)

### To confirm external synchronization

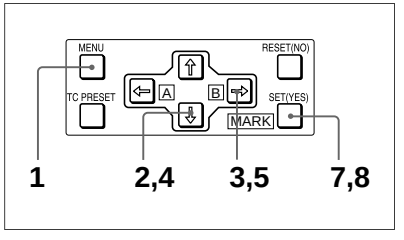
Press the STOP button to put the unit into stop mode, then press the REC button.
Look at the time counter display and check that the time code value displayed there matches the external time code value.

## Rerecording the Time Code—TC Insert Function

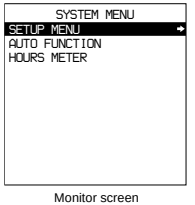
The TC insert function makes it possible to use the internal time code generator to rewrite time code or user bits when the time code recorded on a tape is discontinuous.
You can start recording time code from an initial value which can be set freely *(see page 43)*.

**Notes**

- Use a tape which is recorded in the DVCAM format. (You cannot use the TC insert function with a tape recorded in DV format.)
- The time code recording starts from the current tape position. Cue the tape up beforehand to the required start position.
- If you use a tape on which ClipLink log data is recorded, the ClipLink log data will be lost.



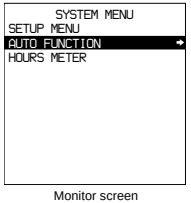

**1** Open the door on the lower part of the front panel, then press the MENU button.



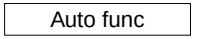

Monitor screen

Time counter display

**2** Press the ⇧ or ⇩ button to select “AUTO FUNCTION.”



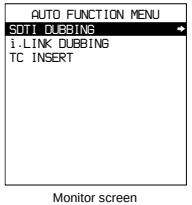

Monitor screen




Time counter display

**3** Press the ⇨ button.

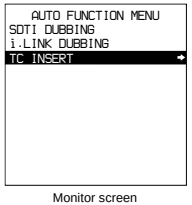
This displays the items in the level 1 of the auto mode execution menu.




Monitor screen

Time counter display

**4** Press the ⇩ button to select “TC INSERT.”

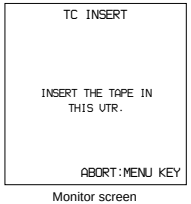



Monitor screen

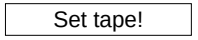
Time counter display

**5** Press the ⇨ button.

The following message appears.



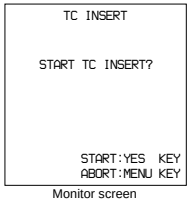

Monitor screen




Time counter display

**6** Insert the cassette.

A message to confirm the TC insert operation appears.



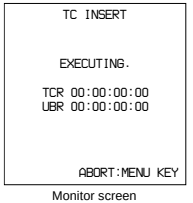

Monitor screen

Time counter display

**To cancel the TC insert operation**
Press the MENU button.

**7** Press the SET (YES) button.

Time code recording starts from the current tape position.




Monitor screen

Time counter display

When the recording ends, the message “TC INSERT COMPLETED. PUSH THE YES BUTTON.” appears on the monitor screen and “Completed” appears in the time counter display.

**8** Press the SET (YES) button to exit the menu.

# High-Speed and Low-Speed Search—Quickly and Accurately Determining Editing Points

Use the search function to easily locate the desired scene and to quickly and accurately determine edit points.

When F. FWD/REW under the AUTO EE SELECT menu item *(see page 57)* is set to PB (factory default setting), you can use the F FWD and REW buttons on this unit or external equipment for high-speed search.

## Search Operations via External Equipment

You can control the unit in the following operation modes from an editing control unit (ES-7, PVE-500, etc.) connected to the REMOTE connector on the rear panel or from a SIRCS-compatible remote control unit such as the DSRM-10 connected to the CONTROL S connector on the front panel.

**Shuttle:** Use this mode to view color video playback at speeds ranging from 0 to 60 times normal speed in both directions.

**Note**

When controlling the unit from the DSRM-10 for shuttle-mode search, the maximum search speed is 16 times normal speed in both directions.

**Jog:** Use this mode for low-speed search and frame-by-frame search.

**Digital slow:** Use this mode for noise-free color video playback at speeds ranging from 0 to $^{1}/_{2}$ times normal speed in both directions.

**Still:** Use this mode to view a still picture of any field.

**Jog audio:** Use this mode to monitor the audio at speeds ranging from 1 to $^{1}/_{30}$ times normal speed in both directions.

**Note**

When controlling this unit from external equipment, be sure to turn on or off the buttons in the remote control setting section on the front panel of the unit as shown in the following table.

| External equipment | Buttons in the remote control setting section |
|---|---|
| Editing control unit connected to the REMOTE connector | Turn on both the REMOTE and 9PIN buttons. |
| SIRCS-compatible remote control unit connected to the CONTROL S connector | Turn off the REMOTE button. |
| Equipment connected to the i.DV IN/OUT connector | Turn on both the REMOTE and i.LINK buttons. |

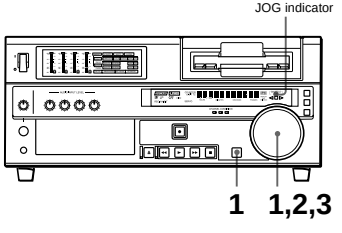
*For description on how to carry out search operations via external equipment, see the operating instructions for the equipment.*

## Search Operations on This Unit

When you perform searching on this unit, be sure to turn off the REMOTE button on the front panel.

### Playing back in jog mode

In jog mode, you can control the speed of playback by the speed of turning the search dial. The playback speed range is ±1 times normal speed by factory default. The speed variation range and pattern can be changed with the JOG RESPONSE menu item *(see page 58)*.
To carry out playback in jog mode, use the following procedure.




**1** Press the SEARCH button or search dial so that the JOG indicator in the display section is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

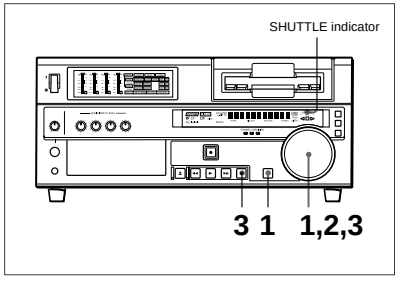
**2** Turn the search dial in the desired direction at the speed corresponding to the desired playback speed.

Playback in jog mode starts.

**3** To stop playback in jog mode, stop turning the search dial.

### Playing back in shuttle mode

In shuttle mode, you can control the speed of playback by the angular position of the search dial. The range of playback speed is ±32 times normal speed by factory default. This can be changed with the SHUTTLE menu item *(see page 57)*. The search dial has detents at the positions of still image and ±10 times normal speed.
To carry out playback in shuttle mode, use the following procedure.




**1** Press the SEARCH button or search dial so that the SHUTTLE indicator in the display section is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

**2** Turn the search dial to the desired angle corresponding to the desired playback speed.

Playback in shuttle mode starts.

**3** To stop playback in shuttle mode, return the search dial to the center position, or press the STOP button.

**To return to normal-speed playback**
Press the PLAY button.

**To alternate between normal-speed playback and shuttle mode playback**
Set the search dial to the position corresponding to the desired shuttle playback speed, then switch between normal-speed playback and shuttle playback by pressing the PLAY and SEARCH buttons alternately.
For intermittent shuttle mode playback, press the STOP and SEARCH buttons alternately.

# Digitally Dubbing Signals in DVCAM Format

In addition to straightforward tape dubbing, you can also use this unit to dub automatically from the beginning of the tape to the end through the SDTI (QSDI) or i.LINK interface.

- To use the SDTI (QSDI) interface, the optional DSBK-1802 board is required.
- To use the i.LINK interface, the optional DSBK-1803 board is required.

When a tape recorded on a DSR-1/1P Digital Videocassette Recorder or DSR-130/130P Digital Camcorder is dubbed, the ClipLink log data held in the cassette memory is also copied.

**Notes**

- Use a tape recorded in the DVCAM format. A tape recorded in DV format cannot be used as a source tape for dubbing through the SDTI (QSDI) or i.LINK interface.
- Regardless of the audio recording mode setting of this unit, dubbing is performed with the original audio recording mode unchanged (two-channel/48 kHz mode or four-channel/32 kHz mode).
- Approximately the last 2 minutes of the tape may not be copied because of differences in tape lengths. (If an index picture is recorded in this portion, it may also not be copied.)
- A continuous recorded section of approximately 5 seconds is required before the recording start point. It is recommended to record beforehand color bars or a similar signal at the start point of the source tape to be dubbed on this unit.

### Connections for dubbing via SDTI (QSDI) interface

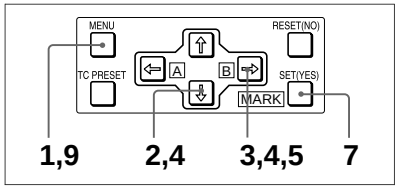
To carry out dubbing through the SDTI (QSDI) interface, connect the REMOTE and SDTI (QSDI) IN/OUT connectors on this unit to those on the DSR-85/85P/80/80P/60/60P/70/70P/2000/2000P/1800/1800P/1600/1600P.

*For details of the connections and switch settings, see "Connections for SDTI (QSDI) Dubbing" on page 86.*

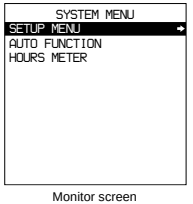
### Connections for dubbing via i.LINK interface

To carry out dubbing through the i.LINK interface, connect the i.DV IN/OUT connectors on this unit and the player.

Use the following procedure.




**1** Press the MENU button on the menu control panel.

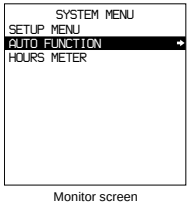



Monitor screen

Setup menu

Time counter display

**2** Press the ⇧ or ⇩ button to select "AUTO FUNCTION."



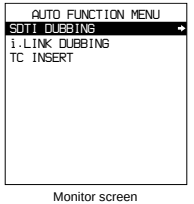

Monitor screen

Auto func

Time counter display

**3** Press the ⇨ button.

This displays the items in the level 1 of the auto mode execution menu.



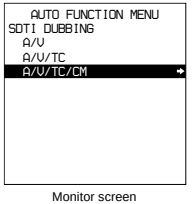

Monitor screen

SDTI DUB

Time counter display

**4** Press the ⇨ button to display the menu level 2 for the item "SDTI DUBBING," and select the data to be dubbed with the ⇩ button.

**Example: Selecting "A/V/TC/CM"**



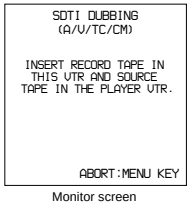

Monitor screen

>A/V/TC/CM

Time counter display

**5** Press the ⇨ button.

The following message appears.



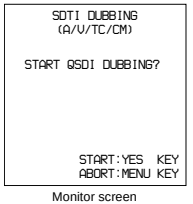

Monitor screen

Set tape!

Time counter display

**6** Insert the source tape in the player, and the recording tape in this unit.

A message to confirm the dubbing operation appears.




Monitor screen

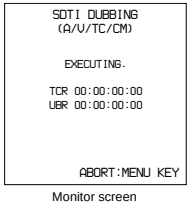
Start dub?

Time counter display

**To cancel the dubbing operation**
Press the MENU button.

**7** Press the SET (YES) button.

The tape is automatically wound back to the beginning, and dubbing starts.




Monitor screen

Executing

Time counter display

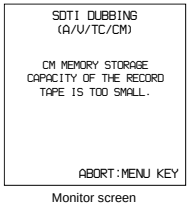
**To end the dubbing operation while it is in progress**
Press the STOP button.

When the dubbing is completed, message "COMPLETED" appears on the monitor screen and "Completed" in the time counter display.
The source tape and recording tape are both automatically rewound to the beginning, and the cassettes ejected. When the cassette is ejected, this unit returns to the state in step **5**.

**8** To continue by dubbing another tape, repeat steps **6** and **7**.

**9** When the dubbing is completed, press the MENU button to exit the menu.

**If the following message appears in step 6 for an A/V/TC/CM dubbing operation**



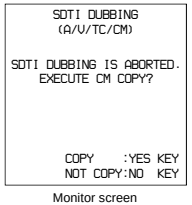

Monitor screen

CM capacity!

Time counter display

When carrying out A/V/TC/CM dubbing, if you insert the cassettes in step **6**, the cassette memory capacity of the cassettes inserted in both this unit and the player are checked automatically.
If the cassette memory capacity of the source tape is larger than that of the recording tape, the above message appears. In this case, replace the recording tape by a tape with a larger cassette memory capacity.

**If the following message appears in step 7 for an A/V/TC/CM dubbing operation**




Monitor screen

Copy CM?

Time counter display

When carrying out A/V/TC/CM dubbing, if you press the STOP button to stop dubbing in step **7**, or if dubbing stops because the source tape is longer than the recording tape, the above message appears to confirm whether or not to copy the contents of the cassette memory.
To copy the contents of the cassette memory, press the SET (YES) button.
If you do not wish to copy the contents of the cassette memory, press the RESET (NO) button. If you press the RESET (NO) button, however, the contents of the cassette memory may not agree with the material recorded on the tape.







# Chapter 4 Menu Settings

## Menu Organization

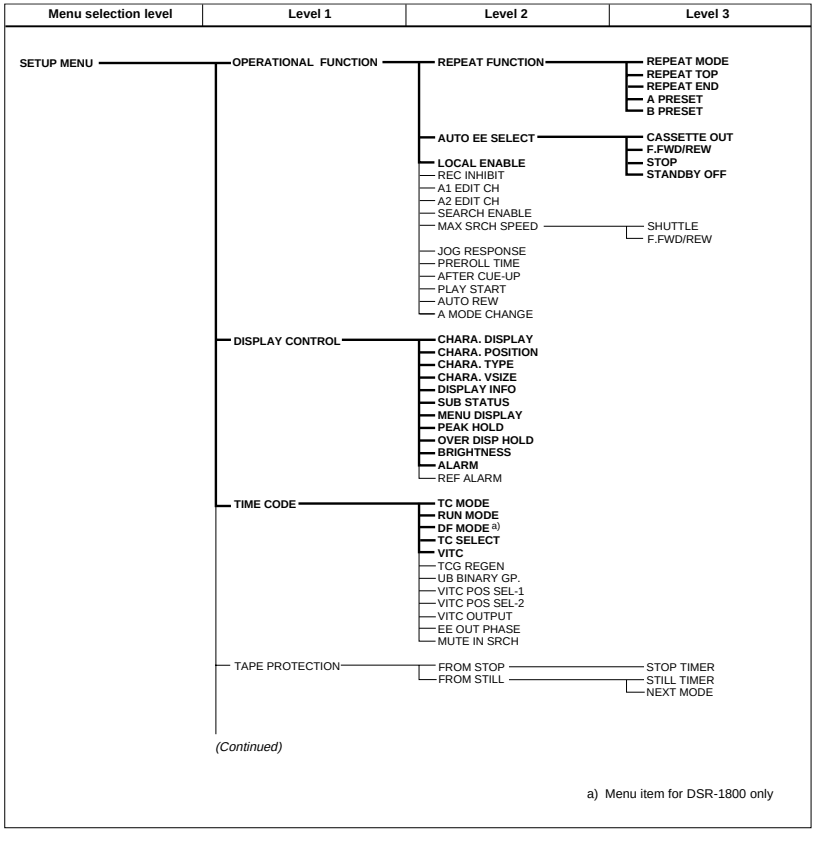
As shown in the following figure, the menu system consists of four levels and is functionally divided into three subsystems: the setup menu, the auto mode (AUTO FUNCTION) execution menu and the digital hours meter display menu. This chapter mainly describes the setup menu, showing its contents and how to operate it.

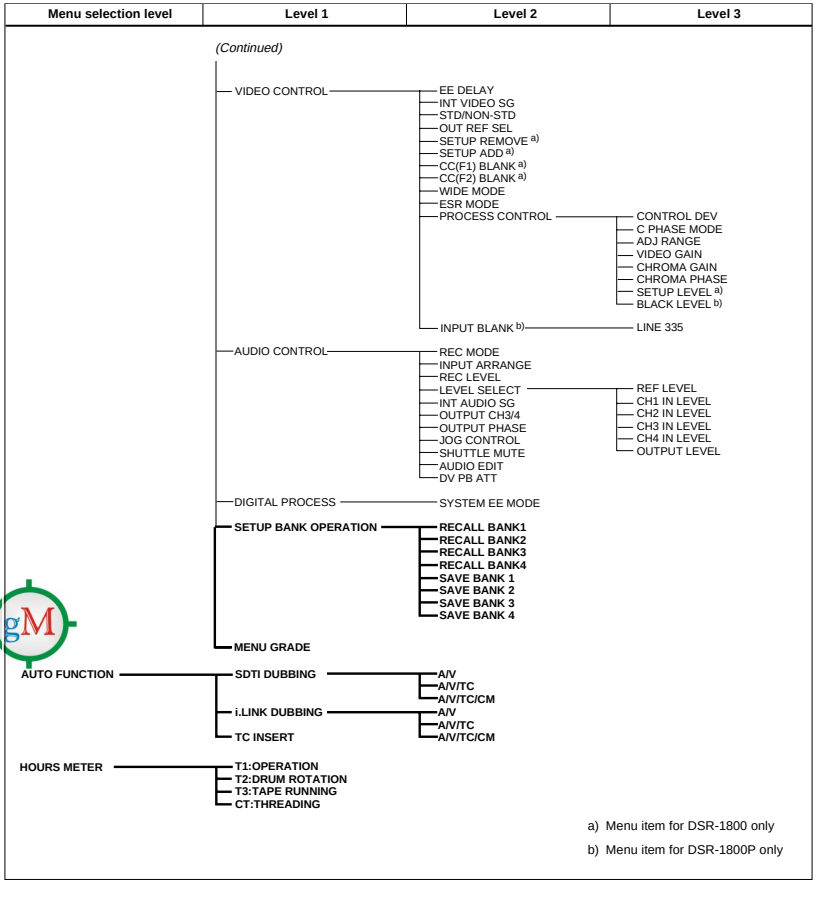
*For details of the AUTO FUNCTION menu, see "Digitally Dubbing Signals in DVCAM Format" on page 50 and "Rerecording the Time Code—TC Insert Function" on page 45.*

*For details of the digital hours meter display, see "Regular Checks" on page 91.*

The items of the setup menu are divided into several functional groups on level 1, and except for the MENU GRADE item the settings themselves are made on level 2 or level 3.
Also, the menu items are divided into two categories according to how frequently they are accessed: the "basic" items, to which frequent access is normally required, and the "enhanced" items, which are less frequently used. In the following figure, the items shown in boldface are basic items, and the other items are enhanced items.
The menu settings are saved in non-volatile memory, which means they are not erased when you power off the unit after executing the setting operation.

## Menu organization



# Menu Contents

## Setup Menu

The purpose and settings of the setup menu items are described below.

### Indications of menu items and settings

- In the table below entitled “Menu contents,” the indication of each menu item or setting on the monitor screen is shown first, then the indication of the same item or setting in the time counter display of this unit is shown in square brackets ([ ]).

**Examples:**

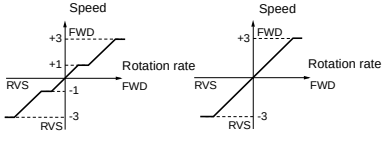
| Indication on monitor screen | Indication in time counter display |
|---|---|
| OPERATIONAL FUNCTION | [Operational] |
| CASSETTE OUT | [>> Cass. out] |
| *EE | [>>> EE] |

- Settings preceded by an asterisk (such as *EE) are factory default settings.
- In the time counter display, one to three “>” symbols may precede item or setting indications depending on the current menu level. Larger numbers of “>” symbols indicate lower menu levels.

### Menu contents

| OPERATIONAL FUNCTION [Operational]: Operation settings | | Description of settings |
|---|---|---|
| **REPEAT FUNCTION [>REP FUNC]:** Make settings for repeat playback mode. | **REPEAT MODE [>>REPEAT MD]:** Determine whether or not to put the unit into repeat playback mode. | ***OFF [>>> OFF]:** Do not put the unit into repeat playback mode.<br>**ON [>>> ON]:** Put the unit into repeat playback mode.<br>**ON (FREEZE) [>>> FREEZE]:** Put the unit into freeze playback mode. In this case, while the unit is cueing up to the repeat start point, the freeze picture of the repeat end point is displayed. |
| | **REPEAT TOP [>>REP TOP]:** Determine whether the repeat start point is the beginning of tape or point A. | ***TAPE TOP [>>>Tape top]:** The repeat start point is the beginning of tape.<br>**A POINT [>>>A point]:** The repeat start point is point A as set by the user. |
| | **REPEAT END [>>REP END]:** Determine whether the repeat end point is the end of the video recorded portion, the end of tape or point B. | ***VIDEO END [>>>VD end]:** The repeat end point is the end of the video recorded portion.<br>**TAPE END [>>>Tape end]:** The repeat end point is the end of tape.<br>**B POINT [>>>B point]:** The repeat end point is point B as set by the user. |
| | **A PRESET [>>A preset]:** Specify a time code value to be used as the setting of point A. | *For details, see “Setting Points A and B for Repeat Playback” on page 34.* |
| | **B PRESET [>>B preset]:** Specify a time code value to be used as the setting of point B. | *For details, see “Setting Points A and B for Repeat Playback” on page 34.* |

| OPERATIONAL FUNCTION [Operational]: Operation settings | | Description of settings |
|---|---|---|
| **AUTO EE SELECT [> Auto EE]:** Determine whether the unit enters EE mode or PB mode when audio and video signals from other equipment are input.<br>When this unit is used as the recorder for cut editing, it is possible to output the input audio and video signals to the monitor. This enables editing operation to be carried out using a single monitor. | **CASSETTE OUT [>> Cass. out]:** Operations when the cassette has been ejected | ***EE [>>> EE]:** Output video and audio signals received from other equipment.<br>**PB [>>> PB]:** Mute video and audio signals. |
| | **F. FWD/REW [>> F. FWD/ REW]:** Operations when in fast forward or rewind mode | **EE [>>> EE]:** Output video and audio signals received from other equipment.<br>***PB [>>> PB]:** The unit enters playback mode and outputs a playback video signal. Audio signals are muted. |
| | **STOP [>> STOP]:** Operations when in stop mode | **EE [>>> EE]:** Output video and audio signals received from other equipment.<br>***PB [>>> PB]:** The unit enters playback mode and outputs a still picture. |
| | **STANDBY OFF [>> STBY OFF]:** Operations when in standby off mode | **EE [>>> EE]:** Output video and audio signals received from other equipment.<br>***PB [>>> PB]:** The unit enters playback mode and outputs a still picture. |
| **LOCAL ENABLE [> Local ENA]:** Select which of the tape transport control buttons (EJECT, REW, PLAY, F FWD, STOP, and REC) operate when the REMOTE button is lit. | | **ALL DISABLE [>> All DIS]:** All of the tape transport control buttons are disabled.<br>***STOP & EJECT [>> STOP & EJ]:** Only the STOP and EJECT buttons are enabled.<br>**ALL ENABLE [>> All ENA]:** All of the tape transport control buttons are enabled, and settings such as preroll time change or time data display selection are effective. |
| **REC INHIBIT [>REC INH]:** Determine whether to prohibit recording on tape. | | ***OFF [>> OFF]:** Do not prohibit recording on tape.<br>**ON [>> ON]:** Prohibit recording on tape. (The REC INHIBIT indicator on the front panel lights.) |
| **A1 EDIT CH [> A1 Edit CH]:** Determine which audio channel the EDIT PRESET command set on an editing control unit (such as the PVE-500) for A1 is assigned to. | | ***CH-1 [>> CH-1]:** Assign to channel 1.<br>**CH-2 [>> CH-2]:** Assign to channel 2.<br>**CH-3 [>> CH-3]:** Assign to channel 3.<br>**CH-1 & CH-2 [>> CH-1&2]:** Assign to channel 1 and channel 2. |
| **A2 EDIT CH [> A2 Edit CH]:** Determine which audio channel the EDIT PRESET command set on an editing control unit (such as the PVE-500) for A2 is assigned to. | | ***CH-2 [>> CH-2]:** Assign to channel 2.<br>**CH-3 [>> CH-3]:** Assign to channel 3.<br>**CH-4 [>> CH-4]:** Assign to channel 4.<br>**CH-3 & CH-4 [>> CH-3&4]:** Assign to channel 3 and channel 4. |
| **SEARCH ENABLE [>Search ENA]:** Select how the unit enters the search mode. | | ***DIAL DIRECT [>> DIAL]:** Press the SEARCH button or, except during recording or editing, turn the search dial.<br>**VIA SEARCH KEY [>> via KEY]:** Press the SEARCH button. |
| **MAX SRCH SPEED [>Max SRCH]:** Specify the maximum tape speed in search mode (shuttle) and F.FWD (fast forward)/REW (rewind) mode. | **SHUTTLE [>>SHUTTLE]:** Specify the maximum tape speed in search mode (shuttle). | **X60 [>>> X60]:** Maximum 60 times normal speed<br>***X32 [>>> X32]:** Maximum 32 times normal speed<br>**X16 [>>> X16]:** Maximum 16 times normal speed |
| | **F.FWD/REW [>>F.FWD/ REW]:** Specify the maximum tape speed in F.FWD/REW mode. | **MAX [>>> MAX]:** No maximum tape speed is specified.<br>***X85 [>>> X85]:** Maximum 85 times normal speed<br>**X60 [>>> X60]:** Maximum 60 times normal speed<br>**X32 [>>> X32]:** Maximum 32 times normal speed<br><br>**Note**<br>When this item is set to MAX, the playback video signal is muted. |

| OPERATIONAL FUNCTION [Operational]: Operation settings | Description of settings |
|---|---|
| **JOG RESPONSE [>JOG dial]:** Select the tape speed characteristics for the search dial rotation rate in jog mode. | ***TYPE1 (-1 to +1) [>> type 1]:** Tape speed varies linearly over the range –1 to +1.<br>**TYPE2 (-3 to +3) [>> type 2]:** Tape speed varies stepwise as shown in the figure below over the range –3 to +3. (Characterized by a zone around –1 and +1 where the tape speed is independent of the rotation rate)<br>**TYPE3 (-3 to +3) [>> type 3]:** Tape speed varies linearly over the range –3 to +3, as shown in the figure below.<br>TYPE2 TYPE3<br>  <br> |
| **PREROLL TIME [> Preroll]:** Set the preroll time. | **0 SEC [>> 0 sec] to 15 SEC [>> 15 sec]:** The preroll time can be set in one-second increments to between 0 and 15 seconds.<br>A preroll time of at least 5 seconds is recommended when using this unit for editing. When an editing control unit such as the PVE-500 has been connected, this setting is disabled and the setting on the editing control unit is in effect. Operations such as the preroll time setting and the time data switching operation are also performed on the editing control unit.<br>**Factory default setting:** 5 SEC [>> 5 sec] |
| **AFTER CUE-UP [> After CUE]:** Select the operating mode following cue-up. | ***STOP [>> STOP]:** Stop mode<br>**STILL [>> STILL]:** Output still pictures in search mode. |
| **PLAY START [> PLAY start]:** Set the timing for switching from stop mode to playback mode.<br>In an editing system including an editing control unit such as the PVE-500, you can adjust this setting so that the delay before switching to playback mode is the same on all the decks of the editing system. It is then no longer necessary to synchronize the decks for editing, and the preroll time can be shortened. | **16 FRAME DELAY [>> 16 delay] to 4 FRAME DELAY [>> 4 delay]: The larger the numerical value, the longer the delay. By adjusting this setting, it is possible to reduce the phase synchronization time and preroll time during editing.**<br>**Factory default setting:** 5 FRAME DELAY [>> 5 delay] (for DSR-1800) or 4 FRAME DELAY [>> 4 delay] (for DSR-1800P) |
| **AUTO REW [>Auto REW]:** Select whether to rewind the tape automatically when recording or playback reaches the end of a tape. | **DISABLE [>> DISABLE]:** Do not rewind the tape automatically.<br>***ENABLE [>> ENABLE]:** Rewind the tape automatically. |
| **A MODE CHANGE [>Aud change]:** Determine whether or not to permit an insert editing that uses a different audio recording mode (2- or 4-channel mode) from that which was used for the tape loaded in the recorder. | ***OFF [>> OFF]:** Do not permit.<br>**ON [>> ON]:** Permit. |

| DISPLAY CONTROL [Display]: Settings related to indications on the monitor and the unit | Description of settings |
|---|---|
| **CHARA. DISPLAY [> Chara disp]:** Determine whether or not to output text (such as time code values) from the VIDEO OUT 2 (SUPER) connector. | **OFF [>> OFF]:** Do not output text. (In spite of this setting, pressing the MENU button causes menu text to be output.)<br>***ON [>> ON]:** Output text. |
| **CHARA. POSITION [> Chara pos]:** Set the position of text superimposed on output from the VIDEO OUT 2 (SUPER) connector to the monitor. | Use ⇧⇩⇦⇨ buttons on the menu control panel to adjust the text position while watching the monitor screen.<br>To return to the level 1 of the setup menu, press the MENU button. |
| **CHARA. TYPE [> Chara type]:** Set the type of characters in text superimposed on output from the VIDEO OUT 2 (SUPER) connector to the monitor. | Make the following settings while watching the monitor screen.<br>***WHITE (WITH BKGD) [>> White]:** White characters on black background<br>**BLACK (WITH BKGD) [>> Black]:** Black characters on white background<br>**WHITE/OUTLINE [>> W/outline]:** White characters with black outline<br>**BLACK/OUTLINE [>> B/outline]:** Black characters with white outline |
| **CHARA. VSIZE [>Chara size]:** Determine the vertical size of characters such as time code output from the VIDEO OUT 2 (SUPER) connector for superimposed display on the monitor. | Make the selection while watching the monitor screen.<br>***×1 [>> ×1]:** Standard size<br>**×2 [>> ×2]:** 2 times standard size |
| **DISPLAY INFO [> DISP info]:** Select information superimposed on output from the VIDEO OUT 2 (SUPER) connector to the monitor. | ***TIME DATA & STATUS [>> Time&STA]:** Time data and operating mode indications<br>**TIME DATA & UB [>> Time&UB]:** Time data selected using the COUNTER SEL button, and user bit data (When user bit data is selected using the COUNTER SEL button, user bit data and time code are shown.)<br>**TIME DATA & CNT [>> Time&CNT]:** Time data selected using the COUNTER SEL button, and CNT value (When CNT is selected using the COUNTER SEL button, CNT value and time code are shown.)<br>**TIME DATA & TIME[>> Time&Time]:** Time data and VITC<br>**TIME DATA ONLY [>> Time]:** Time data only<br>**REC DATE & TIME [>> REC Date]:** The time data selected with the COUNTER SEL button is shown in the time counter display, and the date and time of recording are shown on the monitor screen. |
| **SUB STATUS [> Sub status]:** Select supplementary status information superimposed on output from the VIDEO OUT 2 (SUPER) connector to the monitor. | ***OFF [>> OFF]:** Nothing of supplementary status information<br>**EDIT PRESET [>> Edit pre]:** Indications of the editing mode settings made from the connected editing control unit<br>**TC MODE [>> TC mode]:** Indications of the operating mode of internal time code generator<br>**REMAIN [>> Remain]:** Remaining capacity of the tape<br>**AUDIO MIXING [>> Aud Mix]:** Indications of input audio mixing<br>**ALL [>> ALL]:** All of the above-mentioned items of supplementary status information<br><br>*For details of supplementary status information displayed on the monitor when a setting other than OFF is selected, see "Displaying Supplementary Status Information" on page 74.* |
| **MENU DISPLAY [> Menu DISP]:** Set the type of characters in menu text superimposed on output from the VIDEO OUT 2 (SUPER) connector to the monitor. | Make the following settings while watching the monitor screen.<br>***WHITE (WITH BKGD) [>> White]:** White characters on black background<br>**BLACK (WITH BKGD) [>> Black]:** Black characters on white background<br>**WHITE/OUTLINE [>> W/outline]:** White characters with black outline<br>**BLACK/OUTLINE [>> B/outline]:** Black characters with white outline |

| DISPLAY CONTROL [Display]: Settings related to indications on the monitor and the unit | Description of settings |
|---|---|
| **PEAK HOLD [>Peak hold]:** Set the peak hold time for the audio level meters. | **OFF [>> OFF] to 1.5 SEC [1.5 sec]:** Set the peak hold time in the range of OFF (no peak hold) to 1.5 seconds in 0.1 second steps.<br>**Factory default setting: OFF [>> OFF]** |
| **OVER DISP HOLD [> Hold OVER]:** Determine whether or not to hold the OVER indication display on the audio level meters once the indications light. | ***OFF [>> OFF]:** Do not hold the OVER indication display.<br>**ON (HOLD) [>> ON]:** Hold the OVER indication display.<br><br>**Note**<br>With ON selected, once the display is held it will remain held unless you change the setting to OFF. |
| **BRIGHTNESS [> Brightness]:** Set the brightness of front panel indicators. | Set brightness as a percentage of the maximum.<br>**100% [>> 100%]**<br>***75% [>> 75%]**<br>**50% [>> 50%]** |
| **ALARM [> ALARM]:** Determine whether alarm messages are issued or not. | **OFF [>> OFF]:** Alarm messages are not issued.<br>***ON [>> ON]:** Alarm messages are issued. |
| **REF ALARM [> REF ALARM]:** Determine whether alarm messages related to reference video signal are issued or not. | **OFF [>> OFF]:** Alarm messages are not issued.<br>***ON (LIMITED) [>> ON (Limit)]:** Alarm messages are issued only during recording mode, EE mode, and while editing.<br>**ON [>> ON]:** Alarm messages are issued. |

| TIME CODE [Time code]: Settings related to the time code generator | Description of settings |
|---|---|
| **TC MODE [> TC mode]:** Determine the time code to use: internal time code using a preset initial value, regenerated internal time code (locked to time code read from tape), or external time code. | ***INT PRESET [>> PRESET]:** Use internal time code with a preset initial value.<br>**INT REGEN [>> REGEN]:** Use internal time code locked to time code read from tape.<br>**EXT REGEN [>> EXT]:** Use external time code selected as follows.<br>• When TC is selected<br>External time code input to the TIME CODE IN connector<br>• When VITC is selected<br>The VITC time code present in the input video signal<br><br>**Note**<br>When the selected input mode is SDTI or i.LINK (the V:SDTI, SDTI, or i.LINK indicator is lit in the Input selection/audio mode display section), setting this item to EXT REGEN causes the internal time code generator to automatically synchronize with the external time code input to the unit via the SDTI or i.LINK interface. |
| **RUN MODE [> RUN mode]:** Select the advancement (RUN) mode of the time code generator. | ***FREE RUN [>> FREE RUN]:** Time code generator keeps running.<br>**REC RUN [>> REC RUN]:** Time code generator only runs while recording.<br><br>**Note**<br>Set to FREE RUN when carrying out editing with an editing control unit. With the REC RUN setting, editing will not be carried out correctly. |
| (For DSR-1800 only)<br>**DF MODE [> DF mode]:** Select whether the time code generator and time counter operate in drop frame mode or non-drop frame mode.<br>Normally select drop frame mode, to keep in synchronization with real time. The non-drop frame mode is useful for example when using computer graphics, and working on a frame count basis. | ***ON (DF) [>> ON (DF)]:** Drop frame mode<br>**OFF (NDF) [>> OFF (NDF)]:** Non-drop frame mode |





| TIME CODE [Time code]: Settings related to the time code generator | Description of settings |
|---|---|
| **TC SELECT [>TC select]:** Determine which to display in the time counter display, TC or VITC. | **VITC [>> VITC]:** Display VITC.<br>***TC [>> TC]:** Display TC. |
| **VITC [> VITC]:** Determine whether to record the internally generated time code as VITC. | **OFF [>> OFF]:** Do not record the internally generated time code as VITC. (VITC present in the input video signal is recorded unchanged.)<br>***ON [>> ON]:** Record the internally generated time code as VITC. |
| **TCG REGEN [>TCG regen]:** Select the signal to be regenerated when the time code generator is in the regeneration mode (i.e., when the TC MODE menu item is set to INT REGEN or EXT REGEN). | ***TC & UB [>> TC & UB]:** Both the time code and user bits are regenerated.<br>**TC [>> TC]:** Only the time code is regenerated.<br>**UB [>> UB]:** Only the user bits are regenerated. |
| **UB BINARY GP. [> Binary Gp.]:** Select the user bit binary group flag of the time code generator.<br><br>**Note**<br>When the TC MODE menu item is set to EXT REGEN, the user-bit binary group flag setting follows the setting on the time code input to this unit. | ***000: NOT SPECIFIED [>> 000]:** Character set not specified<br>**001: ISO CHARACTER [>> 001]:** 8-bit characters conforming to ISO 646 and ISO 2022<br>**010: UNASSIGNED-1 [>> 010]:** Undefined<br>**011: UNASSIGNED-2 [>> 011]:** Undefined<br>**100: UNASSIGNED-3 [>> 100]:** Undefined<br>**101: PAGE/LINE [>> 101]:** Multiplex<br>**110: UNASSIGNED-4 [>> 110]:** Undefined<br>**111: UNASSIGNED-5 [>> 111]:** Undefined |
| **VITC POS SEL-1 [>VITC pos-1]:** Select a line to insert the VITC in.<br><br>**Note**<br>You can insert the VITC signal in two places. To insert it in two places, set both this item and also VITC POS SEL-2. | (For DSR-1800)<br>**12 LINE [>> 12 line] to 20 LINE [>> 20 line]:** Select any line from 12 to 20.<br>**Factory default setting:** 16 LINE [>> 16 line]<br><br>(For DSR-1800P)<br>Select a line to insert the VITC in.<br>**9 LINE [>> 9 line] to 22 LINE [>> 22 line]:** Select any line from 9 to 22.<br>**Factory default setting:** 19 LINE [>> 19 line] |
| **VITC POS SEL-2 [>VITC pos-2]:** Select a line to insert the VITC in.<br><br>**Note**<br>You can insert the VITC signal in two places. To insert it in two places, set both this item and also VITC POS SEL-1. | (For DSR-1800)<br>**12 LINE [>> 12 line] to 20 LINE [>> 20 line]:** Select any line from 12 to 20.<br>**Factory default setting:** 18 LINE [>> 18 line]<br><br>(For DSR-1800P)<br>Select a line to insert the VITC in.<br>**9 LINE [>> 9 line] to 22 LINE [>> 22 line]:** Select any line from 9 to 22.<br>**Factory default setting:** 21 LINE [>> 21 line] |
| **VITC OUTPUT [>VITC out]:** Select the time code to be output as VITC. | **OFF [>> OFF]:** Do not output VITC.<br>**TC [>> TC]:** Output TC after converting it into VITC.<br>***VITC [>> VITC]:** Output VITC. |
| **EE OUT PHASE [>EE out]:** Determine the output phase for the LTC signal output from the TIME CODE OUT connector when recording time code and in STOP REC mode (forced EE mode). | ***MUTE [>>mute]:** Mute the output.<br>**THROUGH [>> through]:** Output the time code input to the TIME CODE IN connector as it is. *(See example configuration on page 67.)*<br>**VIDEO INPUT PHASE [>> V input]:** Output the time code with the same phase as the input video signal phase. *(See example configuration on page 67.)*<br>**VIDEO OUTPUT PHASE [>> V output]:** Output the time code with the same phase as the output video signal phase. *(See example configuration on page 68.)* |
| **MUTE IN SRCH [>Mute in SR]:** Select whether to mute the output from the TIME CODE OUT connector in search (jog/shuttle) mode. | **OFF [>> OFF]:** Do not mute.<br>***ON [>> ON]:** Mute. |

| TAPE PROTECTION [Tape protct]: Settings related to tape and video head protection | | Description of settings |
|---|---|---|
| **FROM STOP [> From STOP]:** Set the time to switch from stop mode to tape protection mode. | **STOP TIMER [>> STP timer]:** Set the time to switch from stop mode to tape protection mode. | **5 MIN [>>> 5 min] to 0.5 SEC [>>> 0.5 sec]:** Select time from 12 settings ranging from 0.5 second to 5 minutes in steps of 0.1 second.<br>**Factory default setting:** 1MIN [>>> 1min] |
| **FROM STILL [> From STILL]:** Set the time to switch from still search mode to tape protection mode. Also select the type of tape protection mode. | **STILL TIMER [>> STL timer]:** Set the time to switch from still search mode to tape protection mode. | **5 MIN [>>> 5 min] to 0.5 SEC [>>> 0.5 sec]:** Select time from 12 settings ranging from 0.5 second to 5 minutes in steps of 0.1 second.<br>**Factory default setting:** 1MIN [>>> 1min] |
| | **NEXT MODE [>> Next mode]:** Select the type of tape protection mode to follow still search mode when the time set with the STILL TIMER menu item elapses. | ***STEP FWD [>>> Step]:** The tape is advanced at $^{1}/_{30}$ times normal speed for about 2 seconds.<br>**STANDBY OFF [>>> STANDBY]:** Standby off mode |

| VIDEO CONTROL [Video]: Settings related to video control | Description of settings |
|---|---|
| **EE DELAY [>EE delay]:** An E-E video signal is output delayed with respect to the video input signal by the time for video circuit processing. With this item, select whether or not to delay the sync signal attached to the output video signal by an amount corresponding to the video signal delay. | ***SYNC DELAY [>> sync]:** Delay the sync signal by the corresponding amount of time before attaching it.<br>**VIDEO DELAY [>> video]:** Attach a sync signal with the same timing as the input signal. |
| **INT VIDEO SG [>Video SG]:** Select the test signal to be output from the internal test signal generator. When SG is selected using the VIDEO IN button, the internal test signal generator outputs the selected test signal. This signal can be recorded. | ***75% COLOR BARS [>>75% bars]:** 75% color bar signal<br>**BLACK BURST [>>BB]:** Black burst signal |
| **STD/NON-STD [>STD/N-STD]:** Select the STD or NON-STD mode in accordance with the composite video or S-video input. | ***FORCED STD [>> STD]:** The STD mode is always used (forced STD mode).<br>**FORCED NON-STD [>> NON-STD]:** Use this setting when the input video signal is unstable (forced NON-STD mode). |
| **OUT REF SEL [>Out Ref.]:** Select the reference video signal to use. | ***REF VIDEO [>> REF]:** Use the signal input to a REF. VIDEO IN connector as the reference video signal. The input video signal to be edited is required to be in synchronization with the reference video signal.<br>**INPUT VIDEO [>> INPUT]:** Use the input video signal selected with the VIDEO IN button in the INPUT SELECT section. |
| (For DSR-1800 only)<br>**SETUP REMOVE [> Setup rmv]:** Determine whether or not to remove black setup (7.5 IRE) from input analog video signals when converting them into digital signals. | ***OFF [>> OFF]:** Do not remove black setup.<br>**ON (REMOVE) [>> ON]:** Remove black setup. |
| (For DSR-1800 only)<br>**SETUP ADD [> Setup add]:** Determine whether or not to add black setup to analog video output signals. | ***OFF [>> OFF]:** Do not add black setup.<br>**ON (ADD) [>> ON]:** Add black setup. |
| (For DSR-1800 only)<br>**CC(F1) BLANK [>CC1 blank]:** Select whether to mute the closed caption signal to be superimposed on the 1st field of the output video signal. | ***OFF [>> OFF]:** Do not mute.<br>**ON [>> ON]:** Mute. |
| (For DSR-1800 only)<br>**CC(F2) BLANK [>CC2 blank]:** Select whether to mute the closed caption signal to be superimposed on the 2nd field of the output video signal. | ***OFF [>> OFF]:** Do not mute.<br>**ON [>> ON]:** Mute. |









| VIDEO CONTROL [Video]: Settings related to video control | | Description of settings |
|---|---|---|
| **WIDE MODE [>Wide mode]:** Determine whether to retain wide-screen aspect ratio information accompanying video being recorded or played back. | | ***AUTO [>> Auto]:** When video being recorded or played back is accompanied by wide-screen aspect ratio information, retain the information.<br>**OFF [>> OFF]:** Ignore wide-screen aspect ratio information.<br>**ON [>> ON]:** Whenever recording or playing back video, retain wide-screen aspect ratio information. |
| **ESR MODE [>ESR mode]:** Select whether to enable the edge subcarrier reducer (ESR). | | ***OFF [>> OFF]:** Do not enable.<br>**ON [>> ON]:** Enable.<br>When playing back a composite signal, set this to ON. |
| **PROCESS CONTROL [>Proc ctrl]** | **CONTROL DEV [>>Ctrl dev]:** Select the method of controlling the internal digital video processor. | ***REMOTE [>>>REMOTE]:** Use the optional UVR-60/60P or BVR-50/50P Remote Control Unit to remote control the internal digital video processor.<br>**MENU [>>> MENU]:** Use the setup menu to change the settings for the internal digital video processor. |
| | **C PHASE MODE [>>C Phas MD]:** Select the phase rotation mode for chroma phase control.<br>The effect of this setting applies to the output levels of all of the composite video, S video, SDI and component video signals. | ***U/V (COMPOSITE) [>>> Cmpst]:** Select this setting when observing the composite video output level using a composite vectorscope.<br>**PB/PR (COMPONENT) [>>> Cmpnt]:** Select this setting when observing the component video output level using a component vectorscope. |
| | **ADJ RANGE [>>Adj range]:** Select the variable range of the VIDEO and CHROMA gains. | ***–3 to +3 (dB) [>>> –3/+3]:** –3 dB to +3 dB<br>**WIDE [>>> wide]:** –∞ to +3 dB |
| | **VIDEO GAIN [>>V gain]:** Adjust the video output level. | 00H to 3FFH<br>**Factory default setting:** 200H |
| | **CHROMA GAIN [>>C gain]:** Adjust the chroma output level. | 00H to 3FFH<br>**Factory default setting:** 200H |
| | **CHROMA PHASE [>>C phase]:** Adjust the chroma phase. | 00H to FFH<br>**Factory default setting:** 80H |
| | (For DSR-1800 only)<br>**SETUP LEVEL [>>Setup lev]:** Adjust the black setup level. | 00H to 3FFH<br>**Factory default setting:** 200H |
| | (For DSR-1800P only)<br>**BLACK LEVEL [>>Black lev]:** Adjust the black level. | 00H to 3FFH<br>**Factory default setting:** 200H |
| (For DSR-1800P only)<br>**INPUT BLANK [>Input blnk]** | **LINE 335 [>>Line 335]:** Switch blanking on or off for the 335th line of the input video signal. | **BLANK [>>> blank]:** Blank.<br>**THROUGH [>>> through]:** Do not blank. |

| AUDIO CONTROL [Audio]: Settings related to audio control | Description of settings |
|---|---|
| **REC MODE [>REC mode]:** Select the audio recording mode. | ***2CHANNEL (48kHz) [>> 2 ch]:** 2-channel, 48-kHz mode<br>**4CHANNEL (32kHz) [>> 4 ch]:** 4-channel, 32-kHz mode |

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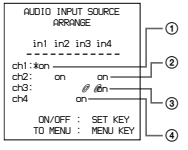
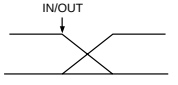
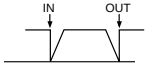
| AUDIO CONTROL [Audio]: Settings related to audio control | | Description of settings |
|---|---|---|
| **INPUT ARRANGE [>Input arng]:** Make settings for input audio mixing. | | Make settings using the arrow buttons (⇦⇨⇧⇩) to move the cursor and the SET (YES) button to toggle the setting on and off.<br>  <br><br>① Input audio channel 1 ("in1") is recorded on audio channel 1 ("ch1") on tape.<br>② Input audio channels 2 and 4 ("in2" and "in4") are recorded mixed on audio channel 2 ("ch2") on tape.<br>③ Input audio channel 4 ("in4") is recorded on audio channel 3 ("ch3") on tape.<br>④ Input audio channel 3 ("in3") is recorded on audio channel 4 ("ch4") on tape. |
| **REC LEVEL [>Rec level]:** Determine whether to enable or disable the AUDIO INPUT LEVEL control knobs on the front panel. | | ***VARIABLE [>> Variable]:** Enable.<br>**PRESET [>> Preset]:** Disable. |
| **LEVEL SELECT [>Level Sel]** | **REF LEVEL [>>REF Level]:** Select the audio reference level (headroom) for recording on tape. | ***–20 dB [>>> –20dB]** (factory default setting for DSR-1800)<br>***–18 dB [>>> –18dB]** (factory default setting for DSR-1800P)<br>**–16 dB [>>> –16dB]**<br>**–12 dB [>>> –12dB]** |
| | **CH1 IN LEVEL [>>CH1 input]:** Select the audio level setting according to the audio level of the signal input to the AUDIO IN CH-1 connector. | ***+4 dBm [>>> +4dBm]**<br>**0 dBm [>>> 0dBm]**<br>**–3 dBm [>>> –3dBm]** (for DSR-1800P only)<br>**–6 dBm [>>> –6dBm]** |
| | **CH2 IN LEVEL [>>CH2 input]:** Select the audio level setting according to the audio level of the signal input to the AUDIO IN CH-2 connector. | ***+4 dBm [>>> +4dBm]**<br>**0 dBm [>>> 0dBm]**<br>**–3 dBm [>>> –3dBm]** (for DSR-1800P only)<br>**–6 dBm [>>> –6dBm]** |
| | **CH3 IN LEVEL [>>CH3 input]:** Select the audio level setting according to the audio level of the signal input to the AUDIO IN CH-3 connector. | ***+4 dBm [>>> +4dBm]**<br>**0 dBm [>>> 0dBm]**<br>**–3 dBm [>>> –3dBm]** (for DSR-1800P only)<br>**–6 dBm [>>> –6dBm]** |
| | **CH4 IN LEVEL [>>CH4 input]:** Select the audio level setting according to the audio level of the signal input to the AUDIO IN CH-4 connector. | ***+4 dBm [>>> +4dBm]**<br>**0 dBm [>>> 0dBm]**<br>**–3 dBm [>>> –3dBm]** (for DSR-1800P only)<br>**–6 dBm [>>> –6dBm]** |
| | **OUTPUT LEVEL [>>Out Level]:** Select the analog audio output reference level. | ***+4 dBm [>>> +4dBm]**<br>**0 dBm [>>> 0dBm]**<br>**–3 dBm [>>> –3dBm]** (for DSR-1800P only)<br>**–6 dBm [>>> –6dBm]** |





| AUDIO CONTROL [Audio]: Settings related to audio control | Description of settings |
|---|---|
| **INT AUDIO SG [>Audio SG]:** Select the operation of the internal audio test signal generator. | **SILENCE [>> silence]:** Silent signal<br>***1kHz SINE [>> 1kHz]:** 1-kHz, –20 dB FS sine wave signal<br>When you select SG as the audio input in the INPUT SELECT section on the front panel, the audio test signal generated by the internal audio test signal generator is input. |
| **OUTPUT CH3/4 [>OUT ch3/4]:** Select the signals to be output from the AUDIO OUT CH-3 and AUDIO OUT CH-4 connectors. | ***LINE OUT [>> line out]:** Output the audio channel-3 and audio channel-4 signals from the AUDIO OUT CH-3 and AUDIO OUT CH-4 connectors as they are.<br>**MONITOR OUT [>> monitor]:** Output the monitor audio L-channel (CH-1) and monitor audio R-channel (CH-2) signals from the AUDIO OUT CH-3 and AUDIO OUT CH-4 connectors, respectively. |
| **OUTPUT PHASE [>Out phase]:** Select the audio playback signal output timing. | **AUDIO OUTPUT PHASE:** 0 to FF (Select in this range.)<br>The reference position corresponds to a setting of 80H. When a value smaller than 80H is selected, the output timing is advanced, and when a value larger than 80H is selected, the output timing is delayed. (80H = 128 samples = approx. 2.7 ms, 1 sample = approx. 20 µs)<br>**Factory default setting:** 80H |
| **JOG CONTROL [> Jog ctrl]:** Select whether to adjust the audio playback speed during slow playback. | **OFF [>> OFF]:** Do not adjust the audio playback speed.<br>***ON [>> ON]:** Adjust the audio playback speed. |
| **SHUTTLE MUTE [>Shutl mute]:** Set the audio muting conditions during shuttle playback. | ***OFF [>> OFF]:** Not muted.<br>**CUEUP or PREROLL [>> CUEUP]:** Muted during cue-up or preroll operations.<br>**FULL [>> FULL]:** Muted in shuttle mode. |
| **AUDIO EDIT [>Audio edit]:** Specify the type of editing for audio signals. | **CUT EDIT [>> Cut edit]:** Cut editing (Discontinuity in audio signal may result at the editing point, causing noise during playback.)<br>***CROSS FADE [>> Cross]:** Cross-fade<br>  <br><br>**FADE IN/OUT [>> Fade]:** Fade in and fade out<br>  <br> |
| **DV PB ATT [>DV PB ATT]:** When playing back a tape recorded in consumer DV format, select whether to attenuate the audio output level. | **OFF [>> OFF]:** Do not attenuate.<br>***ON [>> ON]:** Attenuate. |

| DIGITAL PROCESS [Digi. proc]: Settings related to digital process | Description of settings |
|---|---|
| **SYSTEM EE MODE [>System EE]:** Select the bypass E-E mode or system E-E mode. | ***OFF [>> OFF]:** Bypass E-E (ordinary setting)<br>**ON [>> ON]:** System E-E |

| SETUP BANK OPERATION [Setup Bank]: Settings related to menu bank operations | Description of settings |
|---|---|
| **RECALL BANK1 [>Recall 1]:** Recall menu settings from menu bank 1. | (1) Select the bank you want to recall, then press the ⇨ button.<br>Message “RECALL OK?” appears.<br>(2) To recall, press the SET (YES) button.<br>To quit recalling, press the RESET (NO) button. |
| **RECALL BANK2 [>Recall 2]:** Recall menu settings from menu bank 2. | |
| **RECALL BANK3 [>Recall 3]:** Recall menu settings from menu bank 3. | |
| **RECALL BANK4 [>Recall 4]:** Recall menu settings from menu bank 4. | |
| **SAVE BANK 1 [>Save 1]:** Save current menu settings to menu bank 1. | (1) Select the bank you want to save, then press the ⇨ button.<br>Message “SAVE OK?” appears.<br>(2) To save, press the SET (YES) button.<br>To quit saving, press the RESET (NO) button. |
| **SAVE BANK 2 [>Save 2]:** Save current menu settings to menu bank 2. | |
| **SAVE BANK 3 [>Save 3]:** Save current menu settings to menu bank 3. | |
| **SAVE BANK 4 [>Save 4]:** Save current menu settings to menu bank 4. | |
| **Menu banks**<br>This unit allows four different complete sets of menu settings to be saved in what are termed “menu banks” numbered 1 to 4. Saved sets of menu settings can be recalled for use as required. | |

| MENU GRADE [Menu grade]: Selection of menu items to be displayed | Description of settings |
|---|---|
| Determine whether to display basic items only or both basic and enhanced items on the monitor screen and in the time counter display when using the menu. | ***BASIC [> Basic]:** Display basic items only.<br>**ENHANCED [> Enhanced]:** Display both basic and enhanced items. |



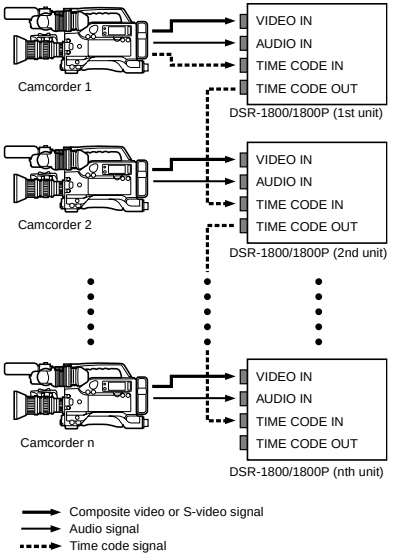




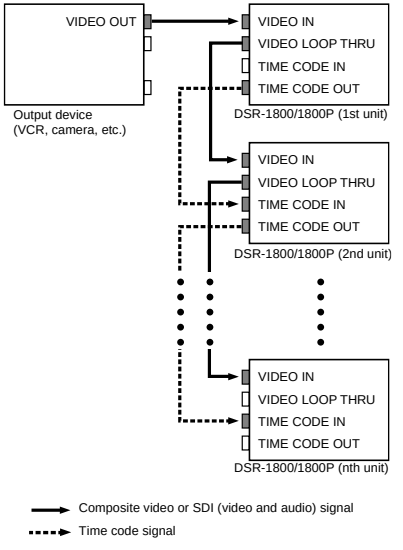
## EE OUT PHASE settings for time code output

Use the following as reference information when setting the EE OUT PHASE menu item *(see page 61)*.

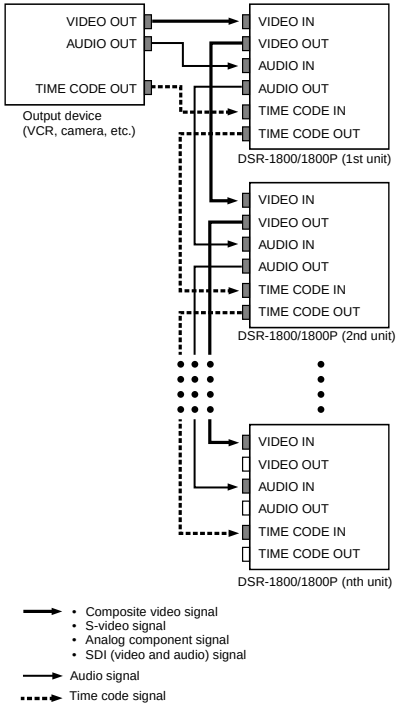
- **THROUGH mode**
  In this mode, the LTC signal is output with the phase synchronized with the input time code signal. This mode is appropriate when recording signals from multiple devices on a number of VCRs.
  When the camcorder is in genlock mode, the time code precision is ±0 frames. When the camcorder is not in genlock mode, it is ±1 frame.




- **VIDEO INPUT PHASE mode**
  The time code output signal is synchronized with the input video signal.
  This mode is appropriate when the output from a single device is recorded on a number of VCRs. The connections are loop-through connections.
  In this mode, the same time code is recorded on all of the VCRs 1 to n.



• **VIDEO OUTPUT PHASE mode**
The time code output signal is synchronized with the output video signal.
This mode is appropriate when outputting signals from a single device to a number of VCRs using separate cables for video, audio, and time code.
In this mode, the same time code is recorded on all of the VCRs 1 to n.








## Auto Mode (AUTO FUNCTION) Execution Menu

The following table shows the purpose and function of the items in the auto mode execution menu.

*For details of the use of individual items, see "Digitally Dubbing Signals in DVCAM Format" on page 50 and "Rerecording the Time Code—TC Insert Function" on page 45.*

### Menu contents

| SDTI DUBBING [SDTI DUB]: Selection of data for SDTI dubbing | Settings |
|---|---|
| For dubbing through the SDTI (QSDI) interface, select data that the dubbing applies to. | **A/V [> A/V]:** Dub the audio and video.<br>**A/V/TC [> A/V/TC]:** Dub the audio, video, and time code.<br>**A/V/TC/CM [> A/V/TC/CM]:** Dub the audio, video, time code, and cassette memory contents.<br><br>**Note**<br>When A/V is selected, the time code recorded follows the setting of the TIME CODE menu items *(see page 60)* in the setup menu. |

| i.LINK DUBBING [i.LINK DUB]: Selection of data for i.LINK dubbing | Settings |
|---|---|
| For dubbing through the i.LINK interface, select data that the dubbing applies to. | **A/V [> A/V]:** Dub the audio and video.<br>**A/V/TC [> A/V/TC]:** Dub the audio, video, and time code.<br>**A/V/TC/CM [> A/V/TC/CM]:** Dub the audio, video, time code, and cassette memory contents.<br><br>**Note**<br>When A/V is selected, the time code recorded follows the setting of the TIME CODE menu items *(see page 60)* in the setup menu. |

| TC INSERT [TC insert]: Time code rewriting | Settings |
|---|---|
| Rewrite the time code from an initial value which can be set freely. | – |

# Changing Menu Settings

This section explains how to change menu settings.

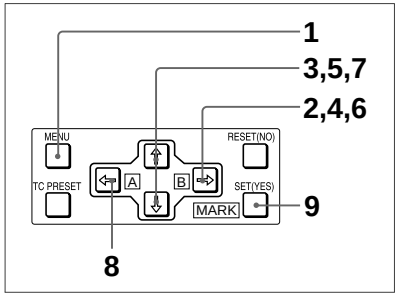
## Buttons Used to Change Settings

Use the following buttons on the menu control panel to change the menu settings.

| Menu control buttons | Functions |
|---|---|
| MENU button | • Opens the menu and launches menu control mode.<br>• Closes the menu and exits menu control mode. |
| ⇧ and ⇩ buttons | These buttons move the highlighted cursor up and down within the current level to select an item or setting. Hold down one of these buttons to make the highlighted cursor move continuously. |
| ⇦ and ⇨ buttons | • Press the ⇨ button to go down one level.<br>• Press the ⇦ button to go up one level.<br>Hold down one of these buttons to make the highlighted cursor move continuously. |
| RESET (NO) button | • Returns the setting to the factory default setting.<br>• Sends a negative response to prompts on the monitor screen. |
| SET (YES) button | • Saves the new setting in memory.<br>• Sends a positive response to prompts on the monitor screen. |

## Changing the Settings of Basic Items

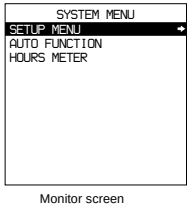
The factory default setting is to display only the basic items. To change the settings of basic items proceed as follows.




**1** Press the MENU button on the menu control panel.

The menu selection level display appears on the monitor. In the figure below, “SETUP MENU” is selected (shown in reverse video).
The time counter display of this unit shows only the currently selected item. When the item name is long, it is abbreviated.

**Menu selection level display**




Monitor screen

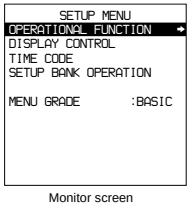
Setup menu

Time counter display

**2** With “SETUP MENU” selected, press the ⇨ button.

This displays all items on menu level 1.

**Level-1 menu display**



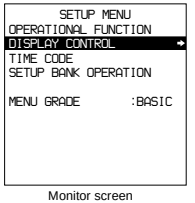

Monitor screen

Operational

Time counter display

**3** Press the ⇧ or ⇩ button to select the required item.

**Example: Display when “DISPLAY CONTROL” is selected**




Monitor screen

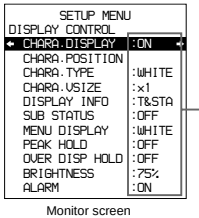
Display

Time counter display

**4** Press the ⇨ button.

This displays the menu level 2 for the menu item selected in step **3**.

**Example: Level-2 display for “DISPLAY CONTROL”**




Monitor screen

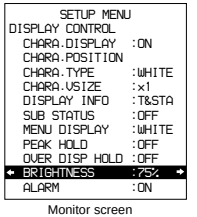
> Chara disp

Time counter display

Current settings

**5** Press the ⇧ or ⇩ button to select the item whose setting you wish to change.
For menu items on level 3, press the ⇨ button to go to the level 3, then press the ⇧ or ⇩ button to select the item whose setting you wish to change.

**Example: Display when “BRIGHTNESS” is selected**



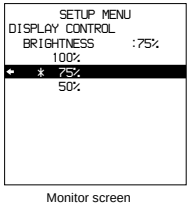

Monitor screen

> Brightness

Time counter display

**6** Press the ⇨ button.

This displays all possible settings for the item selected in step **5**.

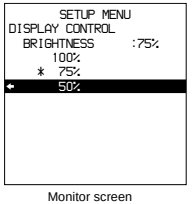



Monitor screen

>> 75%

Time counter display

**7** Press the ⇧ or ⇩ button to change the setting of the item.




Monitor screen

>> 50%

Time counter display

**8** To change other settings, press the ⇦ button to return to the previous screen, then repeat steps **5** to **7** as required.

**9** When you have completed the settings, press the SET (YES) button.

The message “NOW SAVING...” appears on the monitor screen, and “Saving...” appears in the time counter display, while the new settings are saved in memory.
When the saving operation is completed, the monitor screen and time counter display return to their normal indications.

**Notes**

- If you power off the unit before saving operation is completed, settings may be lost. Wait until the saving is completed before powering off the unit.
- If, instead of pressing the SET (YES) button, you press the MENU button, the new settings are not saved. The message “ABORT!” appears on the monitor screen and “Abort!” in the time counter display for about 0.5 second, and the system exits the menus. To change more than one setting, be sure to press the SET (YES) button after making the settings.

### Meanings of indications on the monitor screen

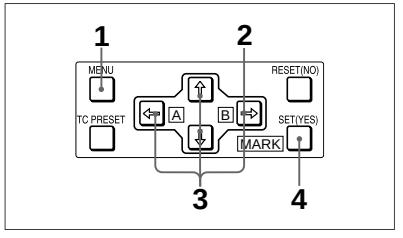
| On-screen indication | Meaning |
|---|---|
| Right-pointing arrow (⇨) at the right of a menu item *See step **1** of the foregoing operating procedure.* | Pressing the ⇨ button switches to the next lower menu level or to a setting selection screen. |
| Left-pointing arrow (⇦) at the left of a menu item *See step **4** of the foregoing operating procedure.* | Pressing the ⇦ button returns to the previous (higher) menu level. |
| Character string at the right of a menu item *See step **4** of the foregoing operating procedure.* | Current setting of the menu item.<br>• When shown with a colon (:): the current setting is the same as the factory default setting.<br>• When shown with a raised dot (•): the current setting is different from the factory default setting.<br>*See step **2** of the operating procedure in “Changing the Settings of Enhanced Items” on page 72.* |
| An asterisk in a complete list of settings *See step **6** of the foregoing operating procedure.* | Factory default setting. |

## Displaying Enhanced Items

The factory default setting is not to display enhanced items.
To display enhanced items, set the MENU GRADE menu item *(see page 66)* to ENHANCED, following the procedure in the previous section “Changing the Settings of Basic Items.” (In step **3**, first select “MENU GRADE,” and next select “ENHANCED,” then press the SET (YES) button to save the setting in memory.)
With this done, when you press the MENU button and the ⇨ button to display the setup menu, all basic and enhanced items in the menu level 1 appear.

## Changing the Settings of Enhanced Items

To change the settings of enhanced items, first carry out the procedure in the previous section “Displaying Enhanced Items,” then proceed as follows.



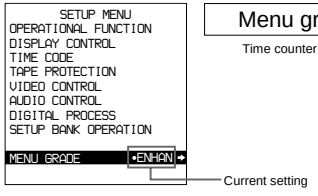

**1** Press the MENU button on the menu control panel.

The menu selection level display appears on the monitor.

**2** With “SETUP MENU” selected, press the ⇨ button.

This displays all basic and enhanced items on menu level 1.

**Level-1 menu display**




Menu grade

Time counter display

Current setting

Monitor screen

**3** Follow the same procedure as in steps **3** to **8** of the procedure in the section *“Changing the Settings of Basic Items” on page 70* using the arrow buttons to select an item and change its setting.

**4** When you have completed the settings, press the SET (YES) button.

The message “NOW SAVING...” appears on the monitor screen, and “Saving...” appears in the time counter display, while the new settings are saved in memory.
When the saving operation is completed, the monitor screen and time counter display return to their normal indications.

## Returning Menu Settings to Their Factory Default Settings

After making menu setting changes, to return settings to their factory default settings (setting initialization), use the following procedure.

### To return a particular setting to its factory default setting

In the display for changing the target setting, press the RESET (NO) button.
Carry out the procedure in the section *“Changing the Settings of Basic Items” on page 70* up to step **6**, then with the current setting displayed (in the example, if the setting has been changed it will be “100%” or “50%”), press the RESET (NO) button. The setting returns to its factory default setting of “75%.”

### To return all settings to their factory default settings

Use the following procedure.

**1** Press the MENU button on the menu control panel to display the menu selection.

**2** Press the ⇨ button to display level 1 of the setup menu.

**3** Press the RESET (NO) button.

A message appears, to confirm whether or not you wish to return all settings to their factory default settings.

| | |
|---|---|
| **Monitor screen message** | “INITIALIZE ALL ITEMS TO FACTORY PRESET VALUES?” |
| **Message in the time counter display** | “Init setup?” |

**4** Press the SET (YES) button.

The message “NOW SAVING...” appears on the monitor screen, and “Saving...” appears in the time counter display, while the settings of all items are returned to their factory default settings. These factory default settings are saved in memory.

**Note**

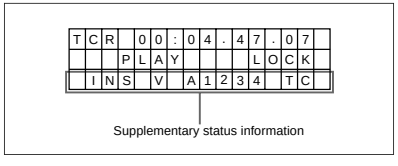
If you power off the unit while settings are being saved, settings may not be correctly returned to their factory default settings. Wait until the saving is completed before powering off the unit.

**To abandon the resetting operation**

Instead of pressing the SET (YES) button, press the RESET (NO) button. The display returns to menu level 1, leaving the settings unchanged.

# Displaying Supplementary Status Information

When you set the SUB STATUS menu item *(see page 59)* to other than OFF, you can view supplementary status information on the monitor screen below the operating mode display area.




The following items of supplementary status information are displayed depending on the setting of the SUB STATUS menu item.

| Setting of SUB STATUS menu item | Items of supplementary information displayed |
|---|---|
| EDIT PRESET | Editing mode settings made on the editing control unit |
| TC MODE | Operating mode of the internal time code generator |
| REMAIN | Remaining capacity of the tape |
| AUDIO MIXING | Setting for input audio mixing |
| ALL | All of the above items |

The following tables show the on-screen indications of supplementary information and their meaning.
In each table, the indications given in brackets such as [ASM] are the indications displayed when the SUB STATUS menu item is set to ALL.

*For the display format when ALL is selected, see page 75.*

**When the SUB STATUS menu item is set to EDIT PRESET:**

| On-screen indication | Meaning |
|---|---|
| ASM [ASM] | Assemble editing mode |
| INS V A1234 TC [V1234T] | INS: Insert editing mode<br>V A1234 TC: Channels or signals selected for insert editing<br>V: Video<br>A1234: Audio 1, 2, 3, 4<br>TC: Time code |

**When the SUB STATUS menu item is set to TC MODE:**

| On-screen indication | Meaning |
|---|---|
| INT PRESET FREE [IP F] | The internal time code generator is operating in FREE RUN mode. |
| INT PRESET REC [IP R] | The internal time code generator is operating in REC RUN mode. |
| INT REGEN-T&U [IRTU] | The internal time code generator is in synchronization with the playback time code (LTC) read from tape. |
| EXT LTC-T&U [ELTU] | The internal time code generator is in synchronization with the external time code (LTC) input to the unit and is generating the same time code value and user bit value as those of the external time code (regeneration). |
| EXT VITC-T&U [EVTU] | The internal time code generator is in synchronization with VITC present in the external video signal input to the unit and is generating the same time code value and user bit value as those of the external time code (regeneration). |
| EXT QSDI-T&U [EQTU] | The internal time code generator is in synchronization with the external time code input to the unit via SDTI (QSDI) interface and is generating the same time code value and user bit value as those of the external time code (regeneration). |
| EXT QSDI.V-T&U [EQTU] | The internal time code generator is in synchronization with the external VITC input to the unit via SDTI (QSDI) interface and is generating the same time code value and user bit value as those of the external time code (regeneration). |
| EXT DVIN-T&U [EDTU] | The internal time code generator is in synchronization with the external time code input to the unit via i.LINK (DV IN) interface and is generating the same time code value and user bit value as those of the external time code (regeneration). |
| EXT DVIN.V-T&U [EDTU] | The internal time code generator is in synchronization with the external VITC input to the unit via i.LINK (DV IN) interface and is generating the same time code value and user bit value as those of the external time code (regeneration). |

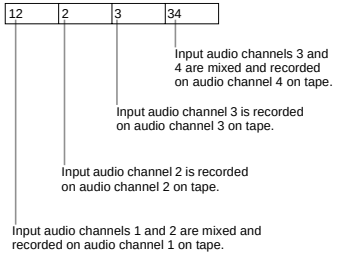
**When the SUB STATUS menu item is set to REMAIN:**

| On-screen indication | Meaning |
|---|---|
| REMAIN 184 min | Remaining capacity of the tape in minutes.<br>When the remaining capacity has not been detected, "REMAIN ---min" appears. |

**When the SUB STATUS menu item is set to AUDIO MIXING:**

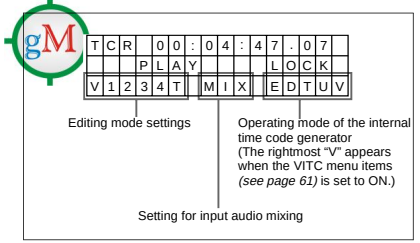
| On-screen indication | Meaning |
|---|---|
| 1234 [MIX] | Input audio channels selected for mixing<br>1234: Input audio channels 1, 2, 3 and 4 |

**Example display:**


12
2
3
34
Input audio channels 3 and 4 are mixed and recorded on audio channel 4 on tape.
Input audio channel 3 is recorded on audio channel 3 on tape.
Input audio channel 2 is recorded on audio channel 2 on tape.
Input audio channels 1 and 2 are mixed and recorded on audio channel 1 on tape.

### Display format of supplementary status information when the SUB STATUS menu item is set to ALL

All items of supplementary status information are displayed in the order shown below.


TCR 00:04:47.07
PLAY LOCK
V1234T MIX EDTUV
Editing mode settings
Operating mode of the internal time code generator
(The rightmost "V" appears when the VITC menu items (see page 61) is set to ON.)
Setting for input audio mixing

# Chapter 5 Connections and Settings

## Connections for a Digital Non-Linear Editing System

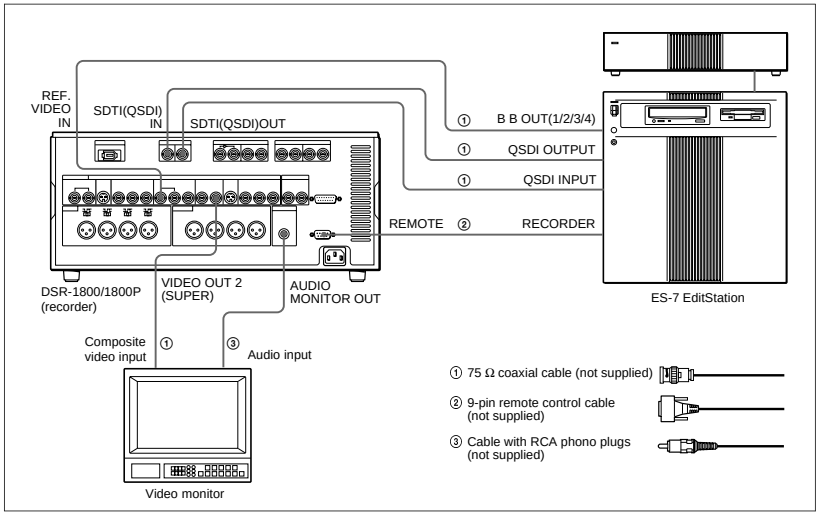
This unit can be connected to an ES-7 EditStation to configure a digital non-linear editing system.
If you use the SDTI (QSDI) interface with the optional DSBK-1802 board installed in the unit, you can transfer video, audio, time code, and other compressed data between this unit and the ES-7.
The unit supports ClipLink functions, enabling index pictures recorded on tape and ClipLink log data stored in cassette memory to be transferred to the ES-7 in an instant.

*For a general description of ClipLink functions, see the appendix "ClipLink Guide" (page 104).*

The following figure shows a connection diagram for a non-linear editing system in which this unit serves as the recorder.

*For connections of the ES-7 and its peripheral devices such as the ESBK-7011 Control Panel, the ESBK-7045 Disk Unit, etc., refer to your ES-7 Operating Instructions.*

**Note**
The example connections shown in this chapter assume that DSR-1600/1600P and DSR-1800/1800P units have the optional DSBK-1801, DSBK-1802, and DSBK-1803 boards installed as required.




**Settings on the DSR-1800/1800P**

| Button | Setting |
|---|---|
| REMOTE | On (lit) |

*For details of video/audio input and audio mode settings, see "Settings for Recording" on page 25.*



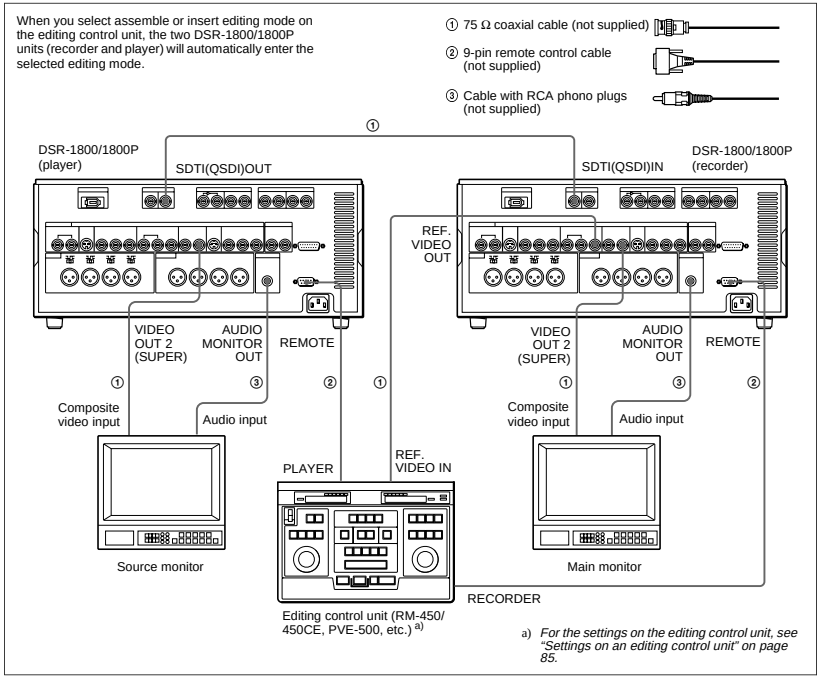




# Connections for a Cut Editing System

The following figure shows a cut editing system configuration that includes two DSR-1800/1800P units to serve as the player and recorder.

*When using a VCR other than the DSR-1800/1800P, refer to its instruction manual.*


When you select assemble or insert editing mode on the editing control unit, the two DSR-1800/1800P units (recorder and player) will automatically enter the selected editing mode.
① 75 Ω coaxial cable (not supplied)
② 9-pin remote control cable (not supplied)
③ Cable with RCA phono plugs (not supplied)
①
DSR-1800/1800P (player)
SDTI(QSDI)OUT
SDTI(QSDI)IN
DSR-1800/1800P (recorder)
REF. VIDEO OUT
VIDEO OUT 2 (SUPER)
AUDIO MONITOR OUT
REMOTE
Composite video input
Audio input
PLAYER
REF. VIDEO IN
Source monitor
Main monitor
RECORDER
Editing control unit (RM-450/ 450CE, PVE-500, etc.) a)
a) For the settings on the editing control unit, see "Settings on an editing control unit" on page 85.

**Settings on the DSR-1800/1800Ps (recorder and player)**

| Button | Recorder | Player |
|---|---|---|
| REMOTE | On (lit) | On (lit) |
| 9PIN | On (lit) | On (lit) |

*For details of the video/audio input and audio mode settings for the recorder, see "Settings for Recording" on page 25.*

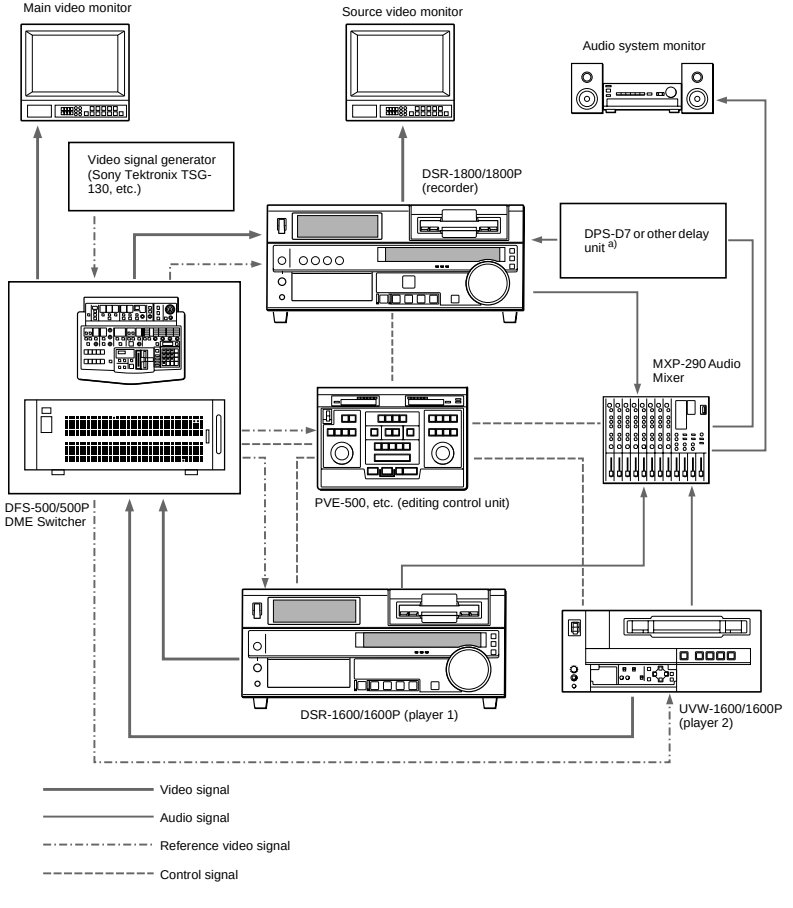
## About reference video signals

In order to provide stable video and audio signals for analog editing, it is necessary for the built-in time base corrector (TBC) to operate correctly. To ensure this, input a reference video signal synchronized with the video signal to the REF. VIDEO IN connector.

# Connections for an A/B Roll Editing System

The following is an example configuration of A/B roll editing system using the DSR-1800/1800P.
In this configuration, the recorder is a DSR-1800/1800P unit, player 1 is a DSR-1600/1600P unit, and player 2 is an analog Betacam UVW-1600/1600P Videocassette Player unit. To create a final tape (a tape that contains a completely packaged program) in Betacam format, use a Betacam VCR such as the UVW-1800/1800P as the recorder.

The purpose of the following figure is to clearly indicate the flow of signals among the component devices in this system. The specific connections and settings are described beginning on *page 82*.




a) When using a DFS-500/500P DME Switcher, the phase of the video signals processed by the DFS-500/500P is delayed. It is therefore necessary to connect a delay unit between the MXP-290 Audio Mixer's output and the audio input to the DSR-1800/1800P (recorder).





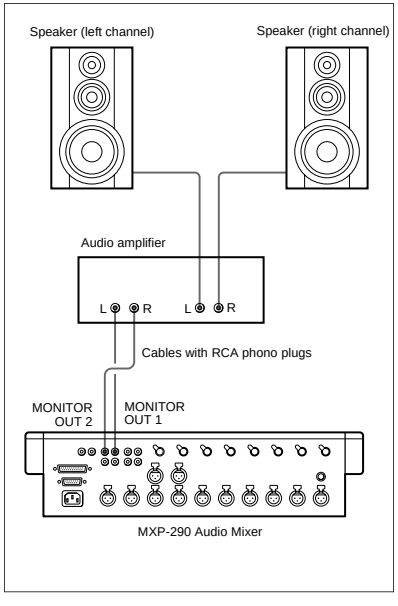


Chapter 5 Connections and Settings

## Audio monitor system connections

The following shows an example of audio monitor system connections.

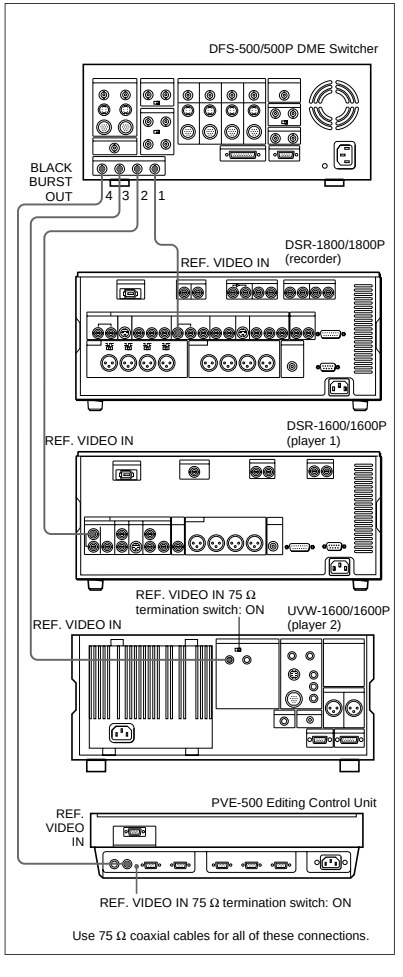
*For details of these connections, refer to the instruction manual for each connected device.*




## Reference video signal connection

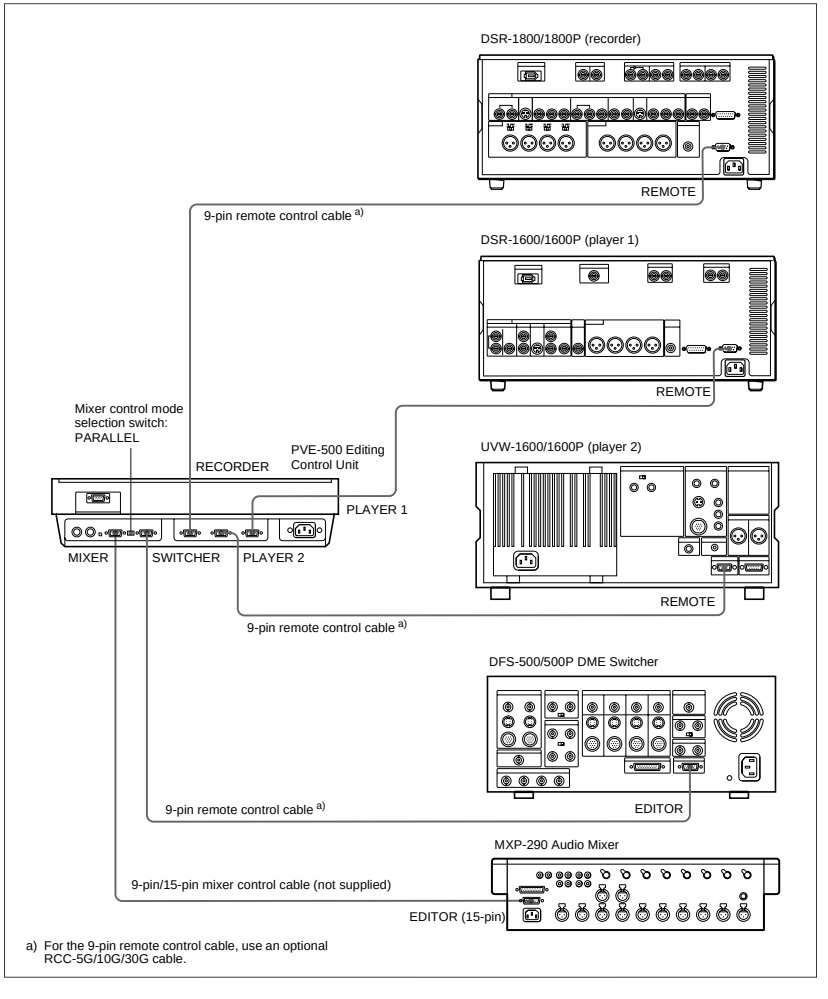
When you perform recording, be sure to input a reference video signal.

*For details of reference video signals, see "About reference video signals" on page 79.*


DFS-500/500P DME Switcher
BLACK BURST OUT
4 3 2 1
REF. VIDEO IN
DSR-1800/1800P (recorder)
REF. VIDEO IN
DSR-1600/1600P (player 1)
REF. VIDEO IN 75 Ω termination switch: ON
REF. VIDEO IN
UVW-1600/1600P (player 2)
PVE-500 Editing Control Unit
REF. VIDEO IN
REF. VIDEO IN 75 Ω termination switch: ON
Use 75 Ω coaxial cables for all of these connections.

## Control signal connections

The following shows an example of control signal connections to enable the editing control unit to control all other A/B roll editing system devices.




a) For the 9-pin remote control cable, use an optional RCC-5G/10G/30G cable.

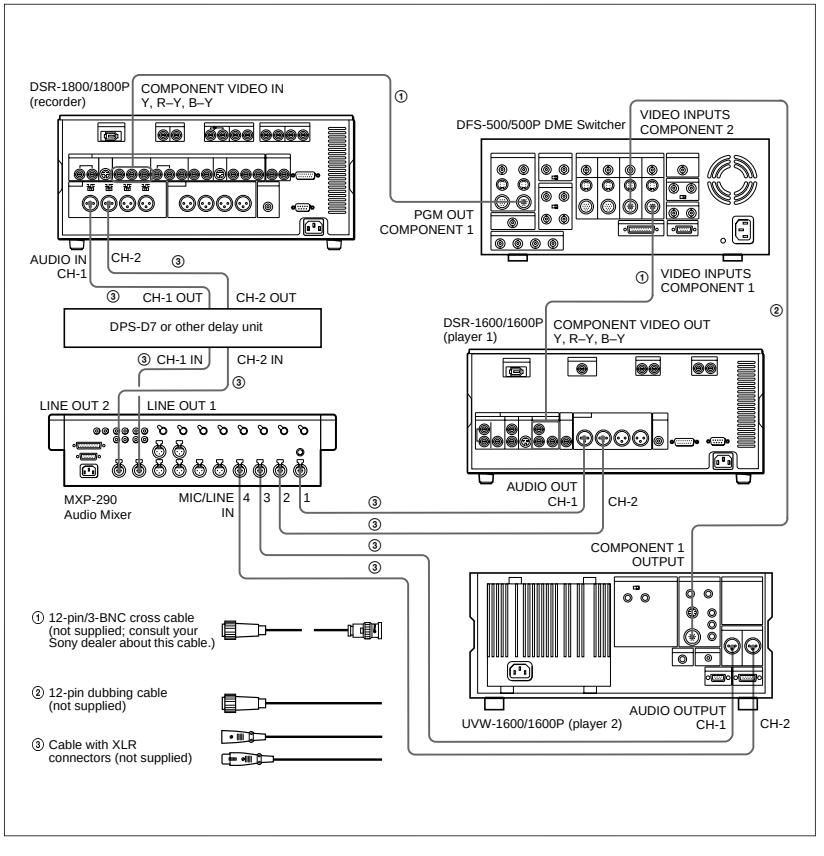
http://getMANUAL.com



## Video/audio signal connections

The following shows an example of video/audio signal connections in an A/B roll editing system.

In this example, analog component signals are used as the video signals and XLR 3-pin connectors are used as audio input/output connectors.



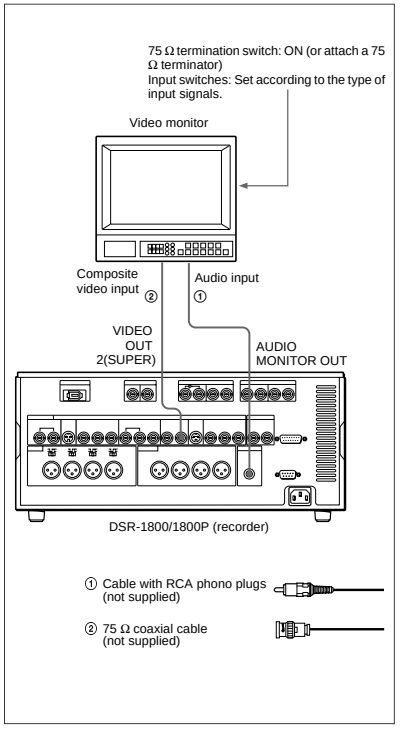

### Settings on the DSR-1800/1800P (recorder)

| Switch/menu | Setting |
|---|---|
| AUDIO IN LEVEL/600 Ω switches | HIGH-ON |
| LEVEL SELECT menu item | Normally +4 dBm *(see page 64)* |

*For details of the video/audio input and audio mode settings, see "Settings for Recording" on page 25.*

## Connection of a video monitor

Set up the following connections to enable monitoring of video and audio signals on a video monitor. In addition to the video and audio signals, you can have time data, the operation mode of the unit, alarm messages, and other information displayed as text on the monitor screen by setting the CHARA. DISPLAY menu item *(see page 59)* to ON (factory default setting).


75 Ω termination switch: ON (or attach a 75 Ω terminator)
Input switches: Set according to the type of input signals.
Video monitor
Composite video input ②
Audio input ①
VIDEO OUT 2(SUPER)
AUDIO MONITOR OUT
DSR-1800/1800P (recorder)
① Cable with RCA phono plugs (not supplied)
② 75 Ω coaxial cable (not supplied)

## Settings on an editing control unit

When connecting an editing control unit, make the settings as follows, according to the model.

### PVE-500

No settings are required.

### BVE-600/900/910/2000 (NTSC model) or FXE-100/120

Set the VCR constants as follows.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | 15 | 00 | 96 | 05 | 05 | 03 | 80 | 0A | 08 | FE | 00 | 80 | 5A | FF |

### BVE-600/900/910/2000 (PAL model) or FXE-100P/120P

Set the VCR constants as follows.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 81 | 15 | 00 | 7D | 05 | 05 | 02 | 80 | 0A | 07 | FE | 00 | 80 | 4C | FF |

### RM-450/RM-450CE

Set the DIP switches as follows.

• **Left switches**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| OFF | – | – | OFF | – | – | – | – |

• **Right switches (RM-450)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| OFF | – | OFF | ON | OFF | OFF | ON | ON |

• **Right switches (RM-450CE)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| ON | – | OFF | ON | OFF | OFF | ON | ON |

### BVE-800

Set the DIP switches as follows.

• **SW2**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| ON | OFF | ON | ON | – | ON | ON | – |

• **SW3 (NTSC model)**

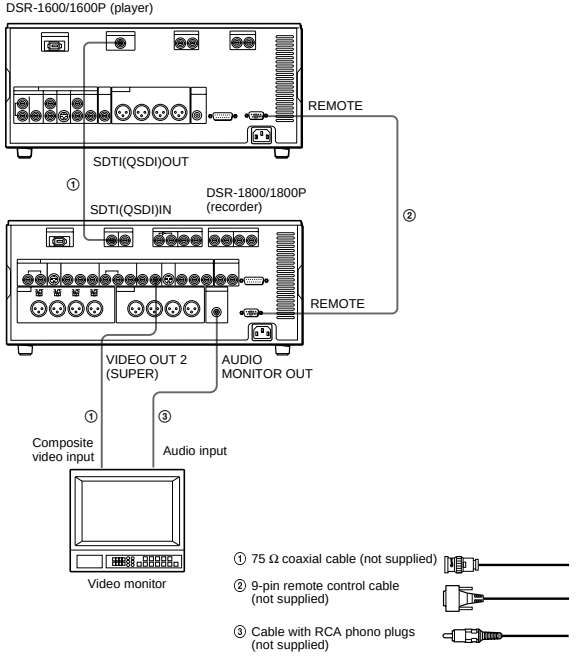
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| ON | ON | ON | OFF | – | ON | OFF | OFF |

• **SW3 (PAL model)**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| OFF | OFF | OFF | ON | – | ON | OFF | OFF |

# Connections for SDTI (QSDI) Dubbing

The following shows an example of connections for digitally dubbing SDTI (QSDI) signals *(see page 50)*, with the DSR-1800/1800P used as the recorder and a DSR-1600/1600P unit as the player.

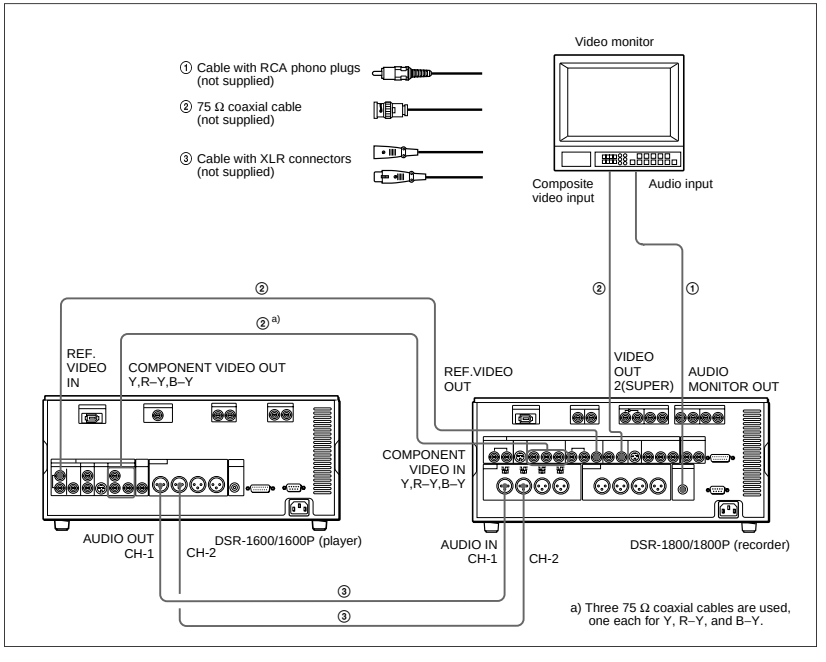



**Settings on the DSR-1800/1800P (recorder) and DSR-1600/1600P (player)**

| Model | Switch/button | Setting |
|---|---|---|
| DSR-1800/1800P (recorder) | REMOTE button | Off (unlit) |
| | 9PIN button | On (lit) |
| DSR-1600/1600P (player) | REMOTE button | On (lit) |
| | 9PIN button | On (lit) |

# Connections for Analog Recording

The following shows connections for a system in which analog playback signals from another recorder or player are recorded on a DSR-1800/1800P. In this system, the video signals are analog component signals and the audio signals are recorded from audio channels 1 and 2.




**Settings on the DSR-1800/1800P (recorder)**

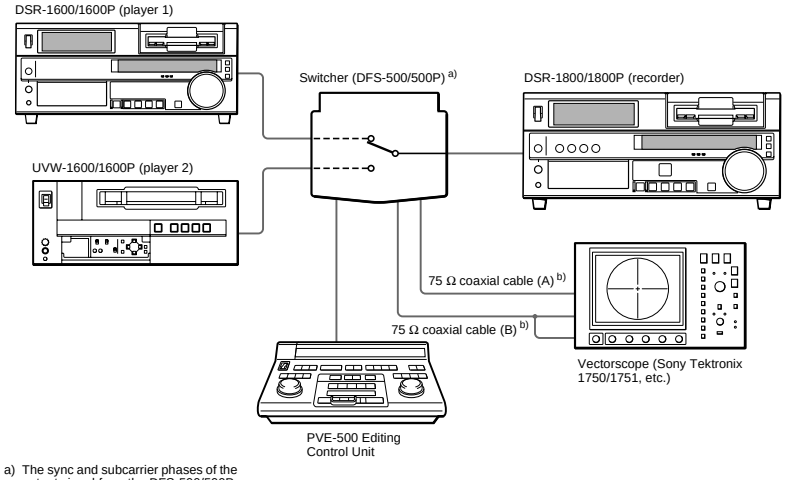
| Switch/menu/input/audio mode a) | Setting |
|---|---|
| AUDIO IN LEVEL/600 Ω switches | HIGH-ON |
| LEVEL SELECT menu item | Normally +4 dBm *(see page 64)* |
| REMOTE button | Off (unlit) |
| Video input | Component |
| Audio input | Analog |
| Audio mode | 2 channel/48 kHz |

a) *For details of the video/audio input and audio mode settings, see "Settings for Recording" on page 25.*

# Adjusting the Sync and Subcarrier Phases

When using two or more players, as in an A/B roll editing system, it is necessary to synchronize the sync and subcarrier (for composite signals) phases of the signals to be edited. If they are not synchronized, picture instabilities or color break-up may occur at edit points.

After configuring the editing system, use a vectorscope to adjust the sync and subcarrier phases of the recorder and players. Subcarrier phase adjustment is necessary when using composite signals and Y/C signals.


DSR-1600/1600P (player 1)
Switcher (DFS-500/500P) a)
DSR-1800/1800P (recorder)
UVW-1600/1600P (player 2)
75 Ω coaxial cable (A) b)
75 Ω coaxial cable (B) b)
Vectorscope (Sony Tektronix 1750/1751, etc.)
PVE-500 Editing Control Unit

a) The sync and subcarrier phases of the output signal from the DFS-500/500P switcher are automatically adjusted.

b) Ensure that the 75 Ω coaxial cables (A) and (B) (not supplied) are of the same length.

### Performing a phase adjustment operation

**1** Press the SCH button on the vectorscope.

The vectorscope switches to SCH mode.

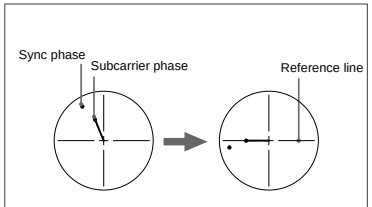
**2** Press the B channel button on the vectorscope.

This displays the black burst signal from the switcher.

**3** Press the EXT button on the vectorscope.

This switches the vectorscope to external synchronization mode.

**4** Adjust the phase synchronization control on the vectorscope so that the sync and subcarrier phases are close to the reference line.



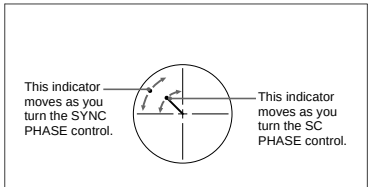

Align the sync and subcarrier phases of the black burst signal to the reference line.

**5** Output the player 1 signal from the PVE-500.

**6** Press the A channel button on the vectorscope.

This displays the sync and subcarrier phases (composite signals only) of the signal from player 1.

**7** On player 1, adjust the SYNC PHASE and SC PHASE controls on the menu control panel, using a Phillips screwdriver, so that the output from player 1 on channel A is in correct phase alignment with the black burst signal on channel B.




Adjust the sync and subcarrier phases of the output signal from player 1.

**Note**

When component signals are used the subcarrier phase indicator does not appear.

**8** Output the player 2 signal from the PVE-500, and repeat steps **6** and **7** to adjust the sync and subcarrier phases of the output from player 2.

# Maintenance and Troubleshooting

Chapter 6

## Maintenance

### Condensation

If you move the unit suddenly from a cold to a warm location, or if you use it in a very humid place, moisture from the air may condense on the head drum. This is called condensation, and if a tape is run in this state, the tape may stick to the drum and can be easily damaged. To lessen the risk of this occurring, this unit is equipped with a condensation detection system.

**If condensation occurs while the unit is operating:**
The alarm message "MOISTURE HAS BEEN DETECTED." appears on the monitor screen, and the alarm message "HUMID!" in the time counter display. At the same time the unit ejects the cassette automatically. If this happens, leave the unit powered on and wait until the alarm messages disappear.

**If the condensation alarm message appears immediately after powering on:**
Leave the unit powered on and wait until the alarm message disappears. You cannot load a cassette into the unit while the alarm message is being displayed.
Once the alarm message disappears, the unit is ready for use.

### Regular Checks

#### Digital hours meter

The digital hours meter keeps cumulative counts of the total operating time, the head drum rotation time, the tape transport operating time, and the number of threading/unthreading operations. These counts can be displayed on the monitor screen and in the time counter display of this unit. Use them as guidelines for scheduling maintenance. In general, consult your Sony dealer about necessary periodic maintenance checks.

**Digital hours meter display modes**
The digital hours meter has the following four display modes.

- **T1 (OPERATION) mode**
  The cumulative total hours during which the unit is powered on is displayed in 10-hour increments.
- **T2 (DRUM ROTATION) mode**
  The cumulative total hours of drum rotation with tape threaded is displayed in 10-hour increments.
- **T3 (TAPE RUNNING) mode**
  The cumulative total hours of tape transport operation for fast forward, rewind, playback, and search (except in still search mode) is displayed in 10-hour increments.
- **CT (THREADING) mode**
  The cumulative number of tape threading/unthreading operation pairs is displayed in 10-operation pair increments.

For all modes except T1 (OPERATION), there are two types of count: a "trip" count, which is resettable, and the cumulative total from manufacture, which is unresettable.

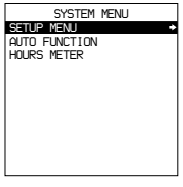
### Displaying the digital hours meter

Use the following procedure.

**1** Press the MENU button on the menu control panel.

The menu selection level display appears on the monitor screen and in the time counter display.

**Menu selection level display**

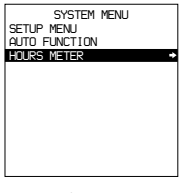



Monitor screen

Setup menu

Time counter display

**2** Press the ⇩ button to select “HOURS METER.”




Monitor screen

Hours meter

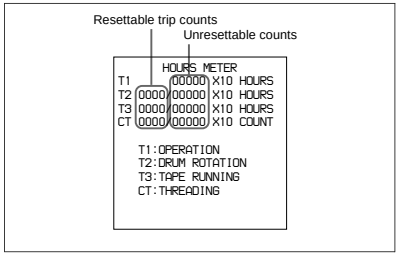
Time counter display

**3** Press the ⇨ button.

The cumulative counts by the digital hours meter are indicated on the monitor screen and in the time counter display.

#### Digital hours meter indications on the monitor screen

All four counts (T1, T2, T3, and CT) are indicated on the monitor screen.




The four-digit value to the left of the slash (/) is the resettable trip count, and the right value is the cumulative total from manufacture.

#### Digital hours meter indications in the time counter display

One of the four indications appears in the time counter display at a time. Use the ⇧ and ⇩ buttons on the menu control panel to change the item displayed.
Initially, only the trip value appears. Hold down the ⇨ button to display also the cumulative total from manufacture, which will appear to the right of the trip value and the slash (/).
The following illustrates the digital hours meter indications in the time counter display in all four display modes. The right-hand indication for each display mode is the indication you can view while holding down the ⇨ button on the menu control panel.

**T1 (OPERATION) mode:**

Oper. 00000

**T2 (DRUM ROTATION) mode:**

Drum 0000 | 0000/00000

**T3 (TAPE RUNNING) mode:**

Tape 0000 | 0000/00000

**CT (THREADING) mode:**

Thread 0000 | 0000/00000

#### To end the digital hours meter display

Press the MENU button on the menu control panel.

#### To reset the trip values

About this operation, consult your Sony dealer.

## Head Cleaning

Always use the DVM12CL (mini size) or DV12CL (standard size) Cleaning Cassette to clean the video and audio heads. You can run the cleaning cassette for 10 seconds per cleaning operation. Follow the instructions for the cleaning cassette, as inappropriate use of the cleaning cassette can damage the heads.

#### To clean the heads

Insert the cleaning cassette. This automatically starts cleaning. You cannot operate any tape transport control buttons other than the EJECT button during the cleaning operation.
After about 10 seconds, the cleaning cassette will be automatically ejected.

# Troubleshooting

If an alarm message appears on the monitor screen, or if the unit appears to be malfunctioning, please check the following before contacting your Sony dealer.

**Tape problems**

| Symptom | Cause | Remedy |
|---|---|---|
| Recording is not possible. | The cassette's REC/SAVE switch is set to SAVE. a) | Set the REC/SAVE switch to REC, or use another cassette. |
| The unit's tape transport control buttons (PLAY, F FWD, REW, etc.) do not work. | The REMOTE button is lit and the LOCAL ENABLE menu item is set to STOP & EJECT or ALL DISABLE. a) | Press the REMOTE button to turn it off, or change the setting of the LOCAL ENABLE menu item *(see page 57)* to ALL ENABLE. |
| | No cassette is loaded. a) | Insert a cassette *(see page 23)*. |
| The NOT EDITABLE indicator on the front panel lights up. | The audio recording mode selected on this unit does not coincides with that of the loaded tape. a) | • When your current purpose is editing, press the REMOTE button to turn it off and set the unit for the same audio recording mode as with the tape using the REC. MODE menu item *(see page 63)*, then turn on the REMOTE button again.<br>• When your current purpose is recording, you can use the tape currently loaded in the unit. |
| | The recording format of the currently loaded tape is "DV" or "DVCPRO." a) | Replace the tape with one recorded in the DVCAM format. |

a) In these states, an alarm message appears on the monitor screen and in the time counter display.

**Time data problems**

| Symptom | Cause | Remedy |
|---|---|---|
| Cannot freely set the initial time data value. | The TC MODE menu item is set to EXT REGEN. a) | Change the setting of the TC MODE menu item *(see page 60)* to INT PRESET. |
| | CNT is selected as the time data type to be displayed (the COUNTER time data type indicator is lit). a) | Press the COUNTER SEL button to make the TC or U-BIT time data type indicator light up (the CNT value cannot be set freely). |
| | The REMOTE button is lit and the LOCAL ENABLE menu item is set to STOP & EJECT or ALL DISABLE. a) | Press the REMOTE button to turn it off or change the setting of the LOCAL ENABLE menu item *(see page 57)* to ALL ENABLE. |
| The tape is running, but the time data is not shown in the time counter display. | The MENU button or TC PRESET button on the menu control panel has been pressed. | Press the button once again to exit the menu control mode, time code preset mode, or digital hours meter display mode. (In either of the menu control mode and time code preset mode, the time data is not shown in the time counter display.) |
| | The U-BIT time data type indicator is lit. | Press the COUNTER SEL button to make the COUNTER or TC time data type indicator light up. |

a) In these states, an alarm message appears on the monitor screen and in the time counter display.

**Input problem**

| Symptom | Cause | Remedy |
|---|---|---|
| It is not possible to record an SDTI (QSDI) signal. | No SDTI signal is input to the unit. a) | Connect an SDTI signal to the SDTI (QSDI) IN connector. |

a) In this state, an alarm message appears on the monitor screen and in the time counter display.

**Monitor problems**

| Symptom | Cause | Remedy |
|---|---|---|
| Data is not superimposed on the monitor screen. | The CHARA. DISPLAY menu item is set to OFF. | Set the CHARA. DISPLAY menu item *(see page 59)* to ON. |
| | The monitor is not connected to the VIDEO OUT 2 (SUPER) connector of this unit. | Connect the monitor to the VIDEO OUT 2 (SUPER) connector. (You must make this connection to display any type of text on the monitor.) |
| The image on the monitor screen is too bright. | The 75 Ω termination switch for video input on the monitor is in the OFF position, or a 75 Ω terminator is not fitted to its video input connector. | Set the 75 Ω termination switch to ON or connect a terminator. |
| The image on the monitor screen is too dark. | In a video signal loop-through connection of video monitors, 75 Ω termination switches for video input on monitors other than the loop-end monitor are in the ON position. | Set the 75 Ω termination switches to OFF on all monitors other than the loop-end monitor. |
| The image is too dark when recording a composite video signal. | | |

**Audio problem**

| Symptom | Cause | Remedy |
|---|---|---|
| The AUDIO INPUT LEVEL control knobs do not work. | The REC LEVEL menu item is set to PRESET. | Set the REC LEVEL menu item *(see page 64)* to VARIABLE.<br>**Note**<br>To be able to perform this operation, it is necessary to set the MENU GRADE menu item *(see page 66)* to ENHANCED. |

**Editing restriction**

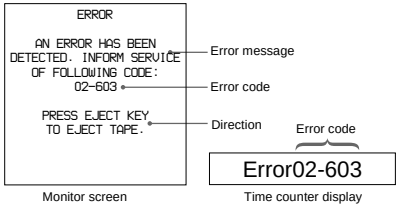
| Symptom | Cause |
|---|---|
| Execution of video editing in insert mode erases subcode data (user bit data, etc.) recorded on tape other than time code data. | This phenomenon cannot be avoided with an editing system using this unit as the recorder. |

## Error Messages

This unit is provided with a self-diagnostic function that detects internal abnormalities. When it detects an abnormality, it outputs an error message to the monitor screen and indicates an error code in the time counter display.

**Note**

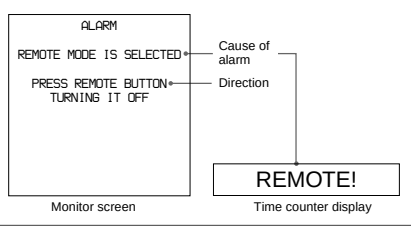
To display error messages on the monitor screen, connect the monitor to the VIDEO OUT 2 (SUPER) connector, and set the CHARA. DISPLAY menu item *(see page 59)* to ON (factory default setting).




If an error message appears, follow the direction indicated on the monitor screen.

## Alarm Messages

When operating this unit, the unit may sometimes output alarm messages such as the one shown below to the monitor screen and the time counter display.




If such an alarm message appears, a connection or operation error may have been made, or condensation on heads may have occurred. Follow the direction indicated on the monitor screen.

**Note**

To display alarm messages on the monitor screen, it is necessary for the monitor to be connected to the VIDEO OUT 2 (SUPER) connector, and set the following menu items to ON.

- CHARA. DISPLAY *(see page 59)*
- ALARM *(see page 60)*
- REF ALARM *(see page 60)*

**Alarm messages and associated directions**

| Alarm message on monitor screen (Cause) | Direction | Alarm message in time counter display |
|---|---|---|
| A cleaning tape has been inserted. | The tape will automatically be ejected after cleaning is completed. | Cleaning Tp |
| A non-standard signal is being used for input video. | Use a standard signal. | VIN NON-STD |
| A non-standard ref. signal is being used for REF. VIDEO. | Use a standard signal. | REF NON-STD |
| Abnormal settings selected in setup menu. | Correct the setup menu settings. Contact your Sony dealer if this alarm message appears again after making corrections. | ILL. SETUP! |
| Audio mixing mode cannot be changed during recording. | – | REC mode! |
| Audio not editable on this tape. | Use a tape recorded in 2-channel/48 kHz or 4-channel/32 kHz mode. | 2CH/32kHz! |
| | | Fs 44.1kHz! |
| | Use a tape having audio signals recorded in locked mode. | UNLOCK mode |
| Audio REC mode selection different from audio on tape. | Select the same audio recording mode as that of the tape. | A mode err |
| Audio REC (recording) mode cannot be changed during recording. | – | REC mode! |
| Cassette adaptor not usable. | Use a tape without cassette adaptor. | Adaptor! |
| Counter mode is selected. | Use the COUNTER SEL button to light the TC or U-BIT time data type indicator in the display section. | CNT mode! |
| Input selection cannot be changed in REC (recording) mode. | – | REC mode! |
| Input signal does not conform to DVCAM/DV format. | – | Unknown Sig |
| Input signal is 625/50. (For DSR-1800) | – | 625/50 sig! (For DSR-1800) |
| Input signal is 525/60. (For DSR-1800P) | – | 525/60 sig! (For DSR-1800P) |
| Input video is not detected. | Check the VIDEO display in the input selection/audio mode display section and supply an appropriate video signal. | No INPUT! |
| Input video signal does not synchronize with REF. VIDEO signal. | Use a reference video signal or connect the recorder REF. VIDEO OUT connector to the player REF. VIDEO IN connector.<br>**Note**<br>When connecting the recorder REF. VIDEO OUT connector to the player REF. VIDEO IN connector, set the STD/NON-STD menu item *(see page 62)* to FORCED NON-STD. | ILL. REF! |
| Moisture has been detected. | Keep the power on and wait until this alarm message disappears. | HUMID! |
| No cassette in VTR. | Load a cassette. | No Cass.! |
| Rec inhibit mode is selected. | Set the REC INHIBIT menu item *(see page 57)* to OFF. | REC INHI.! |
| Record inhibit plug on the cassette is set to inhibit. | Set the REC/SAVE switch on the cassette to REC. | REC INHI.! |
| Remote mode is selected. | Turn off the REMOTE button. | REMOTE! |

**Alarm messages and associated directions**

| Alarm message on monitor screen (Cause) | Direction | Alarm message in time counter display |
|---|---|---|
| Tape cannot be replayed. | Use a tape recorded in 525/60 format. (For DSR-1800) | 625/50 Tape (For DSR-1800) |
| | Use a tape recorded in 625/50 format. (For DSR-1800P) | 525/60 Tape (For DSR-1800P) |
| Tape end has been detected. | Use a new cleaning tape. | Tape end! |
| Tape not editable. | Use a tape recorded in DVCAM format. | Not DVCAM! |
| | Use a tape recorded in 525/60 format. (For DSR-1800) | 625/50 Tape (For DSR-1800) |
| | Use a tape recorded in 625/50 format. (For DSR-1800P) | 525/60 Tape (For DSR-1800P) |
| Tape not recordable. | Use a DVCAM/DV ME tape. | REC INHI.! |
| Tape not usable. | Use a DVCAM/DV/DVCPRO (25M) tape. | ILL. Tape! |
| TC EXTERNAL is selected. | Set the TC MODE menu item *(see page 60)* to INT PRESET. | TC EXT! |
| TCG REGEN mode is selected. | Set the TC MODE menu item *(see page 60)* to INT PRESET. | REGEN mode! |
| TCG RUN mode is set to REC RUN. | Set the RUN MODE menu item *(see page 60)* to FREE RUN. | REC RUN! |







# Appendixes

## Precautions

### On safety

- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time.
- To disconnect the cord, pull it out by the plug. Never pull the cord itself.

### On operation and storage locations

Avoid operation or storage in any of the following places.

- Location subject to extremes of temperature (operating temperature range 5ºC to 40ºC (41ºF to 104ºF))
- Location subject to direct sunlight for long periods, or close to heating appliances (Note that the interior of a car left in summer with the windows closed can exceed 50ºC (122ºF).)
- Damp or dusty places
- Location subject to severe vibrations
- Location near equipment generating strong electromagnetic emissions
- Location near transmitting stations generating strong radio waves

### Operate the unit in a horizontal position

This unit is designed to be operated in a horizontal position. Do not operate it on its side, or tilted through an excessive angle (exceeding 20º).

### Avoid violent impacts

Dropping the unit, or otherwise imparting a violent shock to it, is likely to cause it to malfunction.

### Do not obstruct ventilation openings

To prevent the unit from overheating, do not obstruct ventilation openings, by for example wrapping the unit in a cloth while it is in operation.

### On cleaning

If the casing or panel is dirty, wipe it gently with a soft dry cloth. In the event of extreme dirt, use a cloth steeped in a neutral detergent to remove the dirt, then wipe with a dry cloth. Applying alcohol, thinners, insecticides, or other volatile solvents may result in deforming the casing or damaging the finish.

### On repacking and shipping

Save the original shipping carton and packing material; they will come in handy if you ever have to ship your unit. For maximum protection, repack your unit as it was originally packed at the factory, and take care not to impart violent shocks in transit.

# Specifications

## General

Signal system DSR-1800: NTSC
DSR-1800P: PAL

Power requirements
100 V to 240 V AC, 50/60 Hz

Power consumption (with all options installed)
DSR-1800:
100 W/120 V
DSR-1800P for Europe:
100 W/220 V
DSR-1800P for USA and Canada:
100 W/120 V

Peak inrush current
(1)Power ON, current probe method:
40 A (100 V), 40 A (240 V)
(2)Hot switching inrush current, measured in accordance with European standard EN55103-1:
40 A (230 V)

Operating temperature
5ºC to 40ºC (41ºF to 104ºF)

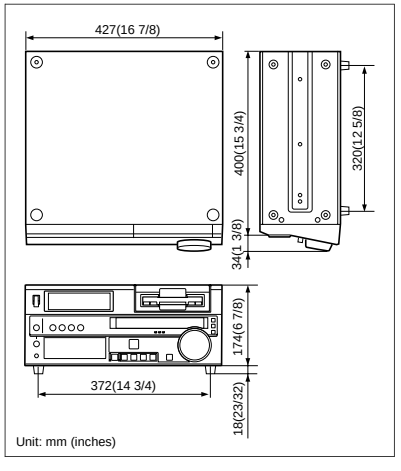
Storage temperature
–20ºC to +60ºC (–4ºF to +140ºF)

Operating relative humidity
Less than 80%

Storage relative humidity
Less than 90%

Mass 13 kg (28 lb 10 oz)

Dimensions (w/h/d, excluding projections)
427 × 174 × 400 mm
($16^{7}/_{8} \times 6^{7}/_{8} \times 15^{3}/_{4}$ inches)



Unit: mm (inches)

## Tape transport control system

Tape speed DSR-1800: 28.193 mm/s
DSR-1800P: 28.221 mm/s

Recording/playback time
Using PDV-184ME standard-size cassette:
Maximum 184 minutes
Using PDVM-40ME mini-size cassette:
Maximum 40 minutes

Fast forward/rewind time
Using PDV-184ME standard-size cassette:
Less than 3 minutes
Using PDVM-40ME mini-size cassette:
Less than 1 minute

Search speed When controlling via RS-422A interface:
Maximum 60 times normal speed in both directions
When controlling from DSRM-10 Remote Control Unit:
Jog mode: 0 (still) to 2 times normal speed in both directions
Shuttle mode: 8 speeds from 0 (still) to 16 times normal speed in both directions

## Video performance

Band width Composite (DSR-1800):
30 Hz to 4.2 MHz ±1.0 dB (Y)
Composite (DSR-1800P):
25 Hz to 4.8 MHz ±1.0 dB (Y)
S-video (DSR-1800):
30 Hz to 5.0 MHz ±1.0 dB (Y),
5.75 MHz +0/–3.0 dB (Y) (TM)
S-video (DSR-1800P):
25 Hz to 5.0 MHz ±1.0 dB (Y),
5.5 MHz +1.0/–2.0 dB (Y),
5.75 MHz +0/–3.0 dB (Y) (TM)
Component (DSR-1800):
30 Hz to 5.0 MHz ±1.0 dB (Y),
5.75 MHz +0/–3.0 dB (Y) (TM),
30 Hz to 1.3 MHz ±1.0 dB (C),
1.5 MHz +0/–5.0 dB (C)
Component (DSR-1800P):
25 Hz to 5.0 MHz ±1.0 dB (Y),
5.5 MHz +1.0/–2.0 dB (Y),
5.75 MHz +1.0/–3.0 dB (Y) (TM),
25 Hz to 1.5 MHz ±1.0 dB (C),
2.0 MHz +1.0/–2.0 dB (C)

S/N Composite I/O (Y):
53 dB or more
S-video I/O (Y): 55 dB or more
Component I/O (Y): 55 dB or more

Y/C delay 30 ns or less

K-factor 2.0% or less (K2T, KPB)

## Processor adjustment range

Video level ±3 dB/–∞ to 3 dB selectable

Chrome level ±3 dB/–∞ to 3 dB selectable

Setup/Black level
±30 IRE (±210 mV)

Chroma phase ±30°

Y/C delay ±100 ns

System phase Sync: ±1 µs*
SC: ±180°

* +2 µs to -3 µs when using a TBC remote control unit

## Audio performance

Frequency response
Two-channel (48 kHz) mode:
20 Hz to 20 kHz +0.5 dB/–1.0 dB
Four-channel (32 kHz) mode:
20 Hz to 14.5 kHz +0.5 dB/–1.0 dB

Dynamic range More than 90 dB

Distortion (THD + N)
Less than 0.05% (48 kHz)

## Input connectors

### Digital signal inputs

SDTI (QSDI) IN (with optional DSBK-1802 SDTI (QSDI) Input/Output Board installed)
BNC type, SDTI (QSDI) format (270 Mbps)

SDI IN (with optional DSBK-1801 SDI/AES/EBU Input/Output Board installed)
BNC type (×2, active-through), Serial Digital Interface format (270 Mbps), SMPTE 259M/CCIR656-III

i.DV IN/OUT (with optional DSBK-1803 i.LINK/DV Input/Output Board installed)
6-pin IEEE 1394 connector

### Analog video inputs

REF. VIDEO IN
BNC type (×2, loop-through)
Black burst
0.286 V (DSR-1800) or 0.3 V (DSR-1800P), 75 Ω, negative sync
Composite sync

VIDEO IN BNC type (×2, loop-through), composite, 1.0 Vp-p, 75 Ω, sync negative

COMPONENT VIDEO IN
BNC type (×3)
Y: 1.0 Vp-p, 75 Ω, negative sync
R–Y/B–Y: 0.7 Vp-p (75% color bars for DSR-1800 or 100% color bars for DSR-1800P), 75 Ω

S VIDEO IN DIN 4-pin
Y: 1.0 Vp-p, 75 Ω
C: 0.286 Vp-p (DSR-1800) or 0.3 Vp-p (DSR-1800P), 75 Ω (burst level)

### Analog audio inputs

AUDIO IN XLR 3-pin, female (×4), +4/0/–3*/–6 dBm, 600 Ω ON/OFF/–60 dBu, high impedance, balanced

* Selectable on DSR-1800P only

### Digital audio inputs

DIGITAL AUDIO (AES/EBU) IN (with optional DSBK-1801 SDI/AES/EBU Input/Output Board installed)
BNC type (×2), complying with AES-3id-1995

### Time code input

TIME CODE IN
BNC type, SMPTE time code (DSR-1800) or EBU time code (DSR-1800P), 0.5 Vp-p to 18 Vp-p, 3.3 kΩ, unbalanced

## Output connectors

### Digital signal outputs

SDTI (QSDI) OUT (with optional DSBK-1802 SDTI (QSDI) Input/Output Board installed)
BNC type, SDTI (QSDI) format (270 Mbps)
SDI OUT (with optional DSBK-1801 SDI/AES/EBU Input/Output Board installed)
BNC type (×2, active-through), Serial Digital Interface format (270 Mbps), SMPTE 259M/CCIR656-III
i.DV IN/OUT (with optional DSBK-1803 i.LINK/DV Input/Output Board installed)
6-pin IEEE 1394 connector

### Analog video outputs

REF. VIDEO OUT
BNC type ×1
Black burst
0.286 V (DSR-1800) or 0.3 V (DSR-1800P), 75 Ω, negative sync
Composite sync
VIDEO OUT 1, 2 (SUPER)
BNC type (×2), composite, 1.0 Vp-p, 75 Ω, sync negative
COMPONENT VIDEO OUT
BNC type (×3), Y/R–Y/B–Y
Y: 1.0 Vp-p, 75 Ω, sync negative
R–Y: 0.7 Vp-p, 75 Ω (75% color bars for DSR-1800 or 100% color bars for DSR-1800P)
B–Y: 0.7 Vp-p 75 Ω (75% color bars for DSR-1800 or 100% color bars for DSR-1800P)
S VIDEO OUT DIN 4-pin
Y: 1.0 Vp-p, 75 Ω, sync negative
C: 0.286 Vp-p (DSR-1800) or 0.3 Vp-p (DSR-1800P), 75 Ω (burst level)

### Analog audio outputs

AUDIO OUT XLR 3-pin, male (× 4), +4/0/–3*/–6 dBm, 600 Ω loading, low impedance, balanced
AUDIO MONITOR OUT
Phono jack, –11 dBu ±1 dBu, 47 kΩ, unbalanced

* Selectable on DSR-1800P only

### Digital audio outputs

DIGITAL AUDIO (AES/EBU) OUT (with optional DSBK-1801 SDI/AES/EBU Input/Output Board installed)
BNC type (×2), complying with AES-3id-1995

### Output for headphones

HEADPHONES
Stereo phone jack, –∞ to –13 dBu, 8 Ω, unbalanced

### Time code output

TIME CODE OUT
BNC type, SMPTE time code (DSR-1800), EBU time code (DSR-1800P), 2.2 Vp-p ±3 dB, 600 Ω, unbalanced

## Remote control connectors

REMOTE D-sub 9-pin, for connection of editing control unit*, RS-422A standard
CONTROL S Stereo minijack, for connection of SIRCS-compatible remote control unit (DSRM-10)
VIDEO CONTROL
D-sub 15-pin, for connection of TBC remote control unit**
i.DV IN/OUT (with optional DSBK-1803 i.LINK/DV Input/Output Board installed)
6-pin IEEE 1394 connector

* ES-7, PVE-500, RM-450/450CE, BVE-600/800/910/2000/9100/9100P, etc.
**UVR-60/60P, etc.

## Supplied accessories

AC power cord (1)
Operating Instructions (1)

## Optional accessories

DSBK-1801 SDI/AES/EBU Input/Output Board
DSBK-1802 SDTI (QSDI) Input/Output Board
DSBK-1803 i.LINK/DV Input/Output Board
RCC-5G/10G/30G 9-pin remote control cable (length: 5 m (16 ft)/10 m (33 ft)/30 m (98 ft))
RMM-130 Rack Mount Kit
Digital video cassette
Standard size: PDVM-64ME/94ME/124ME/184ME
Mini size: PDVM-12ME/22ME/32ME/40ME
Cleaning cassette
DV12CL (standard size), DVM12CL (mini size)

## Related equipment

ES-3/7 EditStation
Linear editing control unit: PVE-500, RM-450/450CE, BVE-600/800/910/2000/9100/9100P
DME switcher: DFS-300/300P, DFS-500/500P, DFS-700/700P
DXC-D30/D30P Color Video Camera
DSR-1/1P/300A Digital Videocassette Recorder
DSR-85/85P/2000/2000P Digital Videocassette Recorder
DSR-1600/1600P Digital Videocassette Player
DSR-300/300P/500WS/500WSP/130/130P/150/150P Digital Camcorder
DSRM-10 Remote Control Unit
TBC remote control unit: UVR-60/60P, BVR-50/50P

Design and specifications are subject to change without notice.

http://getMANUAL.com



# ClipLink Guide

## What Is ClipLink?

The ClipLink function greatly improves the efficiency of the video production process as a whole by recording various editing-related data on tape when shooting. As such, ClipLink is a revolutionary function that transcends the conventional separation of shooting and editing.

### How ClipLink Changes Video Production Techniques

The following describes various ways in which ClipLink* video production differs from conventional video production.

* The ClipLink system is a video production system which uses the cassette memory function.

#### Recording of ClipLink log data lightens the shooting workload

When you start shooting a scene, ClipLink log data such as the scene number and time code data are automatically recorded into the cassette memory. This eliminates the need for a conventional “shot list” compiled by someone using a stopwatch, clipboard and pencil. You can also designate unwanted scenes as “NG” (no good) and automatically skip all “NG” scenes when editing.

#### Recorded index pictures drastically cut editing time

The ClipLink function also features index pictures as a time-saving tool for rough editing. Each index picture is a compressed image taken from the start of each scene, which is recorded onto the tape as a still picture. When editing, begin by transferring only the index pictures and the ClipLink log data to the EditStation’s hard disk. You can also transfer OK scenes only (“NG” scenes are skipped).

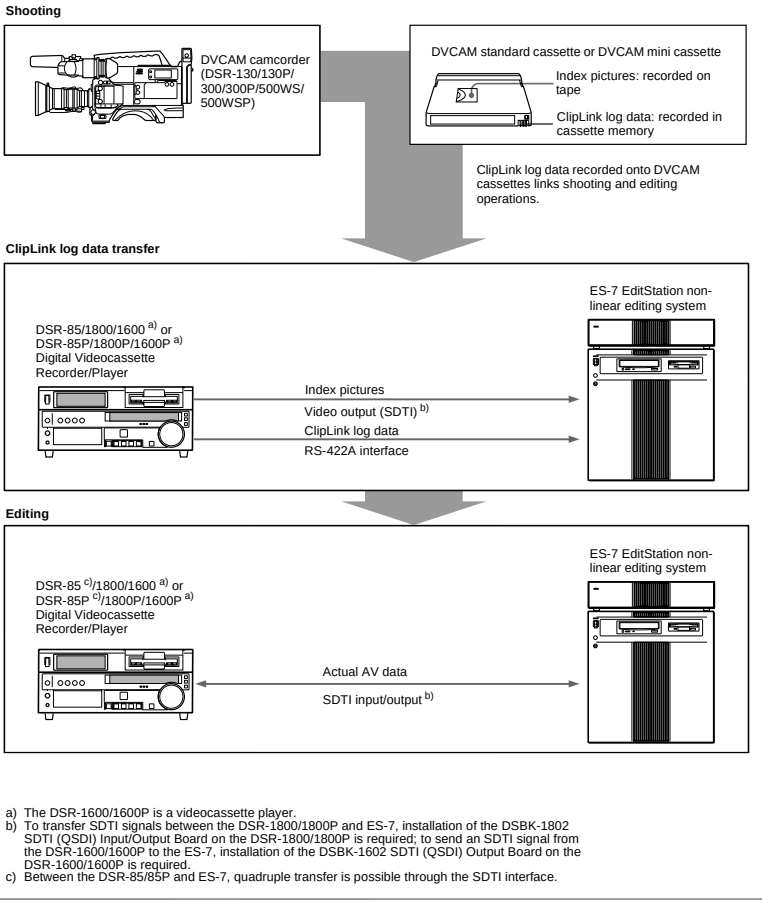
Next, begin rough editing by viewing the index pictures on the EditStation’s GUI display and rearranging them as you wish. This eliminates the difficult work of matching up a handwritten shot list with recorded scenes. After you have completed this rough editing, you can then transfer only the recordings needed for your video program.

#### High-speed transfer of recordings

It is also possible to transfer the editing material itself between the DSR-85/85P and ES-7 at four times normal speed. In other words, the transfer can be carried out in one fourth of the real time duration. It is of course possible to carry out a transfer at four times normal speed when backing up video and audio data recorded on the disk drive to the DSR-85/85P, or in the opposite direction when loading data backed up on the DSR-85/85P to the disk drive. Thus the time required is much shorter than with conventional equipment (for which, for example, transferring a 40-minute segment of video takes 40 minutes).

## Example System Configuration and Operation Flow

The following illustration shows an example system configuration for using the ClipLink function and a typical ClipLink operation flow.


Shooting
DVCAM camcorder (DSR-130/130P/ 300/300P/500WS/ 500WSP)
DVCAM standard cassette or DVCAM mini cassette
Index pictures: recorded on tape
ClipLink log data: recorded in cassette memory
ClipLink log data recorded onto DVCAM cassettes links shooting and editing operations.
ClipLink log data transfer
ES-7 EditStation non-linear editing system
DSR-85/1800/1600 a) or DSR-85P/1800P/1600P a) Digital Videocassette Recorder/Player
Index pictures
Video output (SDTI) b)
ClipLink log data
RS-422A interface
Editing
ES-7 EditStation non-linear editing system
DSR-85 c)/1800/1600 a) or DSR-85P c)/1800P/1600P a) Digital Videocassette Recorder/Player
Actual AV data
SDTI input/output b)

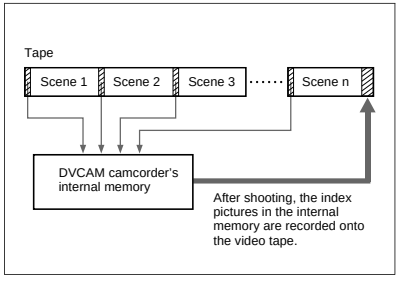
a) The DSR-1600/1600P is a videocassette player.
b) To transfer SDTI signals between the DSR-1800/1800P and ES-7, installation of the DSBK-1802 SDTI (QSDI) Input/Output Board on the DSR-1800/1800P is required; to send an SDTI signal from the DSR-1600/1600P to the ES-7, installation of the DSBK-1602 SDTI (QSDI) Output Board on the DSR-1600/1600P is required.
c) Between the DSR-85/85P and ES-7, quadruple transfer is possible through the SDTI interface.

## Data Generated When Shooting

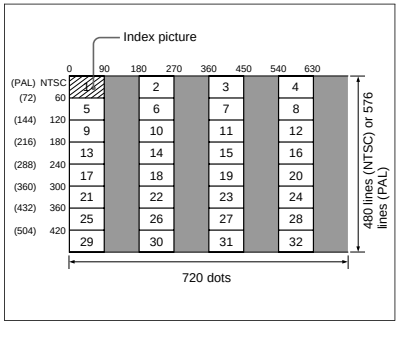
The following describes the kinds of data that is generated when using the ClipLink function.

### Index pictures

When shooting, a single-frame image from the Mark IN point at the start of each scene is recorded as a still picture into the camcorder's internal memory. These images are called "index pictures." When you finish shooting, the index pictures from all scenes are recorded onto the tape after the last scene.


Tape
Scene 1
Scene 2
Scene 3
Scene n
DVCAM camcorder's internal memory
After shooting, the index pictures in the internal memory are recorded onto the video tape.

Up to 32 index pictures can be recorded onto the tape space normally occupied by one frame, as shown below.




Seven frame spaces are reserved at the end of the last scene as a recording area for index pictures. (A cassette with 16 Kbits of cassette memory can record up to 198 index pictures, and a cassette with 4 Kbits of cassette memory can record up to 45 index pictures.)

### ClipLink log data

ClipLink log data can be recorded automatically or manually into the cassette memory for use as a convenient alternative to the conventional "shot list."

ClipLink log data includes the following items.

| ClipLink log data | Description |
|---|---|
| Reel number (cassette number) | Data (maximum length: 8 digits) consisting of alphanumeric characters and/or symbols (This is left blank at shipping.) |
| Scene number | A three-digit number from 001 to 198 (starts at 001 and is automatically incremented with each scene.) |
| Take number | This cannot be changed (set to "1" at shipping). |
| OK/NG | Indicates the OK/NG status of a particular scene. (In the OK case, nothing is recorded.) |
| Mark IN/OUT point time codes | These are the time codes that indicate the Mark IN and Mark OUT points for each scene (HH:MM:SS). These time codes are recorded when the camera has been set to MARK mode. The time code value is rounded up at each Mark IN point and rounded down at each Mark OUT point, to a whole number of seconds. *For details, see "Time codes recorded for Mark IN/OUT points" on page 108.* |
| Cue point time code | This is the time code that indicates the cue points (valid up to the frame digit). This time code is recorded when the camera has been set to CUE mode. When in this mode, the time codes at the start and end of a recording (the Rec IN and Rec OUT time codes) are automatically recorded as Mark IN and OUT points, respectively. |

### How to record ClipLink log data

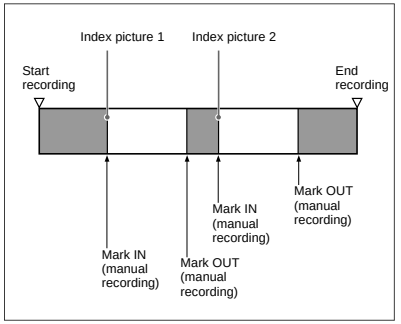
The following describes how to record the various ClipLink log data items.

#### OK/NG status

To designate a scene as "NG," press the NG button on the camera while shooting the scene or at any time before you begin shooting the next scene.
All scenes that do not receive an "NG" designation are recorded as "OK" scenes.
(When you exit the VCR recording mode, changing the OK/NG status is no longer possible.)

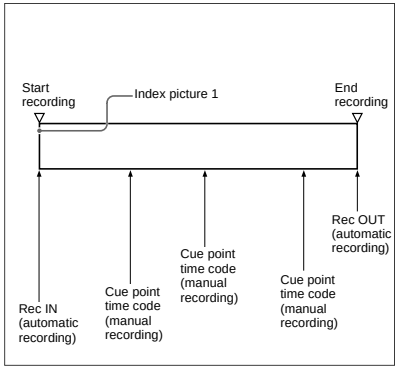
#### Mark IN/OUT point time codes

This data is especially useful when shooting a video program for which a scenario has been created.
Set the camera to MARK mode before you start shooting. While shooting, each time you press the camera's TAKE button, Mark IN and Mark OUT point time codes are recorded alternately.



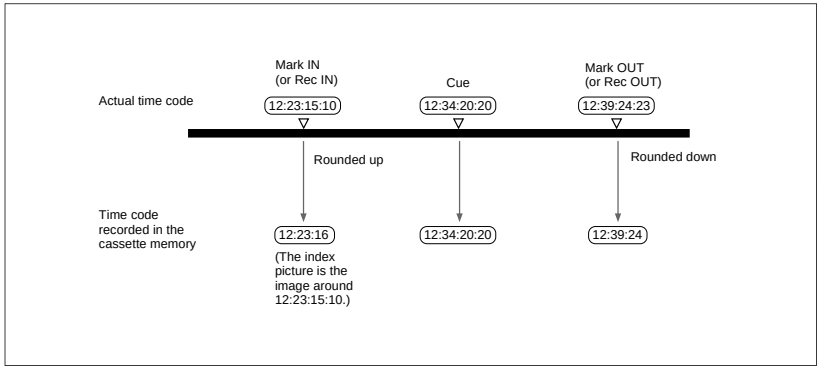

#### Cue point time codes

This type of data is especially useful when shooting scenes that may contain unexpected events, such as when shooting for sports coverage or documentaries.
Set the camera to CUE mode before you start shooting. While shooting, each time you press the camera's TAKE button, the current time code is recorded as a cue point time code.


Start recording
Index picture 1
End recording
Rec IN (automatic recording)
Cue point time code (manual recording)
Cue point time code (manual recording)
Cue point time code (manual recording)
Rec OUT (automatic recording)

### Time codes recorded for Mark IN/OUT points

There is a gap between actual time codes and Mark IN/OUT time codes recorded in the cassette memory, as shown in the figure below. The time code value is rounded up at each Mark IN point and rounded down at each Mark OUT point, to a whole number of seconds.




### Recording capacity for Mark IN/OUT point time codes and cue point time codes

When in MARK mode, up to 198 pairs of Mark IN and Mark OUT points can be recorded (if using a cassette with 16 Kbits of cassette memory).
When in CUE mode, up to 396 time code points (including all cue point time codes and all Mark (Rec) IN and Mark (Rec) OUT point time codes) can be recorded (if using a cassette with 16 Kbits of cassette memory).







# Glossary

**A/B roll editing**
An editing method that uses two or more playback VCRs to create special effects such as dissolve and wipe, and uses one record VCR to record the results of the editing. Using an editing control unit allows efficient control of the VCRs and very precise editing.

**AES/EBU format**
A unified format for digital audio signals. It allows a single connector to carry the signals for two channels.

**B–Y signal**
A chrominance signal determined by subtracting the Y (luminance) signal from the B (blue) signal. One of the component signals.

**Capstan**
A drive mechanism that moves the tape at a specified speed. Its rotation normally synchronizes with a reference sync signal.

**Chrominance signal**
Color signal containing color information such as hue and saturation. Also called C signal.

**Component signals (YRB)**
A video signal consisting of a luminance signal (Y) and two chrominance signals (R–Y, B–Y).

**Composite signal**
A composite video signal containing video, burst and sync signals.

**Condensation**
Condensation of moisture on the tape transport mechanisms of VCRs including the head drum. If moisture condenses on the head drum, the tape adheres to the drum and causes malfunction.

**Drop frame mode**
Time code runs at 30 frames/sec. The NTSC system, however, runs at about 29.97 frames/sec. Drop frame mode adjusts this difference. The time code and video are synchronized by dropping the first two frames of the time code every minute, except at the ten-minute marks.

**EE mode**
EE is an abbreviation of “Electric to Electric”. Video and audio signals are supplied to the VCR’s internal circuits, but not to the recording heads.

**Head drum**
A metal cylinder to which a video head is attached. This drum is rotated at high speeds in synchronization with the sync signal during recording and playback.

**Linear editing**
Editing while playing back video and audio signals recorded on video tape. *See also “Non-linear editing.”*

**Loading**
When being loaded, the tape is pulled out of the cassette case and threaded along the specified tape path and wrapped round the drum to be ready for recording or playback. Generally, this is done automatically when you place the cassette at the cassette entrance of the VCR. Also called threading.

**Loop-through connection**
A connection which allows a signal input to an input connector to pass through the unit and exit from an output connector as input to external equipment. Also called bridging connection.

**Luminance signal**
The signal that determines the brightness of the picture. Also called Y signal. One of the component signals.

**Non-drop frame mode**
The number of frames of the time code and video run is not adjusted. When you use the time code in non-drop frame mode, the real playback time will be about 86 seconds shorter per day than the time code. If you edit frame by frame or if you determine the length of a shot by counting the time code, use drop frame mode.

**Non-linear editing**
Editing while playing back video and audio signals recorded on hard disks. Video scenes stored on disk can be cued up quickly, for increased editing efficiency. *See also “Linear editing.”*

**PCM audio**
This is an audio signal represented by pulse code modulation. The analog audio signal is first broken down into a sequence of pulses, and these are then represented digitally.

**Preroll**
Running of a video tape to a prior to an edit-start point to enable the tape to reach a steady speed and to be synchronized with other video tapes.

**R–Y signal**
A chrominance signal determined by subtracting the Y (luminance) signal from the R (red) signal. One of the component signals.

**Reference video signal**
A video signal consisting of a sync signal or sync and burst signals, used as a reference.

**Setup (for DSR-1800)**
The difference between the reference black level and the blanking level of a composite signal.

**SMPTE**
Abbreviation of Society of Motion Picture and Television Engineers, a professional association established in the USA.

**S/N**
Abbreviation of Signal-to-Noise (ratio). The higher the S/N value, the less noise and higher the picture quality.

**Search mode**
A VCR operating mode used when searching for specific scenes, by viewing the video output or time code values while playing back the tape at various speeds in forward or reverse direction.

**Servo lock**
Synchronizing the drum rotation phase and tape transport phase with a reference signal during playback and recording so that the video heads scan the tape in the same pattern during playback and recording.

**Standby Off mode**
One of two conditions in the stop mode. The drum does not rotate and tape is slackened. There is no damage to the video heads and the tape, but the VCR is not ready for immediate recording or playback.

**Standby On mode**
One of two conditions in the stop mode. The drum is rotating and the tape is wrapped round the drum. The VCR is ready for recording or playback, so a still picture can be obtained.

**Subcarrier**
A sine wave imposed on the luminance portion of a video signal and modulated to carry color information. Its amplitude represents color saturation and its phase represents hue.

**Superimpose**
To put a set of characters onto a picture so that both can be seen at the same time.

**S-video**
A signal format in which Y (luminance) and C (chrominance) signals are separated to reduce interference between them so that noiseless images are reproduced.

**Sync signal**
A reference signal consisting of vertical and horizontal sync signals used for synchronizing the scanning patterns of the video camera and the monitor.

**TBC**
Abbreviation of Time Base Corrector. Electronic circuits to electrically stabilize the playback signals by removing color variation and roll in the playback picture caused by irregularity in drum rotation and tape movement. Time base correction reduces deterioration of picture quality when transmitting or copying playback signals.

**Threading**
*See "Loading."*

**Time code**
Signals recorded on the tape to supply information on tape position such as the hour, minute, second and frame, to assist in setting edit points or searching for particular scenes.

**Unloading**
When the EJECT button is pressed, the VCR automatically winds the tape back into the cassette case. Also called "Unthreading."

**User bits**
Sections of time code information consisting of a total of 32 bits that can be used for recording information such as date, tape ID number, program ID number, etc.







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# *Digital Videocassette Player*

**Operating Instructions**
Before operating the unit, please read this manual thoroughly and retain it for future reference.

DVCAM™

## DSR-1600/1600P

© 2000 Sony Corporation

## Owner's Record

The model and serial numbers are located at the rear. Record these numbers in the spaces provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

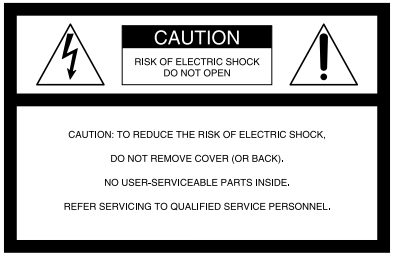
Model No._____ Serial No._____

**WARNING**

**To prevent fire or shock hazard, do not expose the unit to rain or moisture.**

**To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.**

**THIS APPARATUS MUST BE EARTHED.**


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING:** THIS WARNING IS APPLICABLE FOR USA ONLY.
Using this unit at a voltage other than 120 V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

**For customers in the USA**
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

**For customers in Europe (DSR-1600P only)**
This product with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.
Compliance with these directives implies conformity to the following European standards:
• EN60065: Product Safety
• EN55103-1: Electromagnetic Interference (Emission)
• EN55103-2: Electromagnetic Susceptibility (Immunity)
This product is intended for use in the following Electromagnetic Environment(s):
E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors) and E4 (controlled EMC environment, ex. TV studio).



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# Overview Chapter 1

## Features

The DSR-1600/1600P is a 1/4-inch digital video cassette player using the DVCAM digital recording format. It achieves stable, superb picture quality by digitally processing video signals separated into color difference signals and luminance signals (component method).
The unit is equipped with a variety of functions needed for videocassette players used in professional digital video editing systems. It supports the ClipLink™ function developed by Sony Corporation for highly efficient video editing. When connected to a Sony EditStation™, the unit serves as part of a powerful non-linear editing system*.
The unit is also equipped with a full-fledged analog interface to support hybrid systems that combine conventional analog equipment with digital equipment.

* Non-linear editing: This is an editing method that uses video and audio signals digitally encoded and recorded on a hard disk as digital data. When compared with conventional (linear) editing methods, non-linear editing offers vastly improved efficiency in editing operations, for example, by eliminating tape transport time.

The main features of the unit are described in the following.

### DVCAM Format

DVCAM is based on the consumer DV format, which uses the 4:1:1 component digital format, and provides a 1/4-inch digital recording format for professional use.

#### High picture quality, high stability

Video signals are separated into color difference signals and luminance signals, which are encoded and compressed to one-fifth size before being recorded to ensure stable and superb picture quality.

Because the recording is digital, multi-generation dubbing can be performed with virtually no deterioration of quality.

#### Wide track pitch

The recording track pitch is 15 µm, fully 50 percent wider than the 10-µm track pitch of the DV format. Thanks to this feature, the DVCAM format sufficiently meets the reliability and precision requirements of professional editing.

#### High-quality PCM digital audio

PCM recording makes for a wide dynamic range and a high signal-to-noise ratio, thereby enhancing sound quality.
There are two recording modes: 2-channel mode (48-kHz sampling and 16-bit quantization), which offers sound quality equivalent to the DAT (Digital Audio Tape) format, or 4-channel mode (32-kHz sampling and 12-bit quantization). Cassettes recorded in either mode can be played back on this unit.

#### Playback compatibility with DV and DVCPRO formats

A DV cassette recorded on a DV format VCR as well as a DVCPRO (25M) format recorded cassette can be played back on this unit.

**Note**

When playing back a tape recorded in DVCPRO (25M) format, the SDTI and i.LINK outputs *(see "Digital interfaces" on page 6)* of this unit are muted. Furthermore, it is not possible to playback the cue-audio track of the tape.

### Support for three cassette sizes

There are two sizes of DVCAM cassette: standard and mini. You can use either size with this unit.
The unit also accepts L and M sizes of DVCPRO cassette.

- When a cassette is inserted, the reel mechanism of the unit automatically adjusts to the size of the inserted cassette.
- The capacity of a standard cassette is 184 minutes of playback, and that of a mini cassette is 40 minutes.

## A Wealth of Interfaces

### Digital interfaces

The following optional digital interfaces are available for use with the unit.

**SDTI (QSDI)* (optional DSBK-1602 SDTI (QSDI) Output Board):** When the unit is fitted with the optional DSBK-1602 board, it can transfer compressed SDTI (QSDI)-format video, audio and time code signals to the Sony EditStation at normal speed.

**SDI (serial digital interface)/AES/EBU (optional DSBK-1601 SDI/AES/EBU Output Board):** When the unit is fitted with the optional DSBK-1601 board, it can output D1 (component)-format digital video and audio signals and also AES/EBU-format digital audio signals.

**i.LINK (DV)** (optional DSBK-1803 i.LINK/DV Input/Output Board):** The optional DSBK-1803 board (i.LINK compatible) enables input/output of digital video and audio signals in DV format (output only when installed in the DSR-1600/1600P).

* SDTI is the name of a standard interface established as SMPTE 305M. QSDI is a type of SDTI. This unit uses SDTI to transmit DV data, and the input/output connectors are labeled "SDTI (QSDI)."

** i.LINK and i are trademarks and indicate that this product is in agreement with IEEE1394-1995 specifications and their revisions.

### Analog interfaces

The unit also comes with analog interfaces enabling it to be connected to analog video and audio equipment.

**Analog video:** Output connectors for component, composite, and S-video signals are provided.

**Analog audio:** Four output channels are provided.

## Facilities for High-Efficiency Editing

The unit provides an abundance of functions that enhance editing efficiency and precision.

### Support for ClipLink function

In response to commands sent from the EditStation, index pictures recorded on tape or ClipLink log data recorded in the cassette memory can be transferred to the EditStation. The EditStation operator can then efficiently use these pictures and data in a preliminary editing session.

*For an overview of the ClipLink function, see the appendix "ClipLink Guide" (page 73).*

### Internal time code reader

An internal time code reader enables time code compliant with SMPTE (for DSR-1600)/EBU (DSR-1600P) format to be played back. This allows editing to single frame precision.
Outputting time code (LTC) to an external device is also possible using the TIME CODE OUT connector.
The unit is also compatible with VITC.

### Remote control

The unit can be operated by remote control from an editing control unit that supports the RS-422A interface or from an optional SIRCS*-compatible remote control unit such as the DSRM-10.

* SIRCS (Sony Integrated Remote Control System): A command protocol to remote control Sony professional videocassette recorders/players.

### Playback control using search dial

The search dial on the front panel of the unit allows you to carry out playback operation in jog or shuttle mode without requiring an external editing control unit or remote control unit to be connected to the unit.

### High-speed search function

The unit has a picture search function that allows you to view color picture at playback speeds up to 85 times normal speed in forward and reverse directions.
When remote-controlling this unit in shuttle mode from an editing control unit or a remote control unit, you can search at any speed in the range 0 (still) to 60 times normal speed in both directions. You can also search frame-by-frame in jog mode.
At search speeds up to 10 times normal speed in both directions, you can also hear playback audio.

### Digital slow-motion playback

Using the frame memory function, the unit can show noise-free slow-motion playback at speeds ranging from 0 to $^1/_2$ times normal speed in both directions.

### Digital jog sound function

When searching at speeds in the range +1 to $+^1/_{30}$* or $-^1/_{30}$ to –1 times normal speed, the digital jog sound function is enabled. The audio signal is saved in temporary memory, and replayed according to the search speed. This allows searching on the sound track.

* The positive direction refers to forward movement of the tape, and the negative direction to reverse movement.

### Video process control

For analog video output and SDI-format video output, you can adjust the video output level, chroma signal output level, setup level (for DSR-1600), black level (for DSR-1600P), and chroma phase.

## Other Features

### Function to make a convenient presentation tool of this unit

#### "Repeat playback" function

The unit can perform automatic cyclical playback between two selected points on the tape.

#### "Power-on playback" function (in repeat playback mode)

You can choose a menu setting so that powering on the unit makes it immediately start playback.

### Menu system for functionality and operation settings

The unit provides a menu system to make its various functions easier to use and set up its operation conditions.

### Superimposition function

Time code values, operation mode indications, error messages, and other text data can be superimposed and output in analog composite video signals.

### Easy maintenance functions

**Self-diagnostic/alarm function:** This function automatically detects setup and connection errors, operation faults, and other problems. It also displays a description of the problem, its cause, and the recommended response on the video monitor screen or time counter display.

**Digital hours meter:** The digital hours meter functions include four kinds of tally operations for operating hours, head drum usage hours, tape transport hours, and tape threading/unthreading times. The tally results can be viewed on the video monitor or the time counter display.

### Compatible with wide-screen aspect ratio (16:9)

The unit can play back aspect ratio information. When video accompanied by wide-screen aspect ratio information is played back, the unit can output the video signal also containing the aspect ratio information.

### Rack mountable

When you use the optional RMM-130 Rack Mount Kit, you can mount this unit onto an EIA-standard 19-inch rack (height = 4 units).

## Optional Accessories

### DSBK-1601 SDI/AES/EBU Output Board

When installed in the unit, this optional board enables digital video and audio signals in the D1 format and also AES/EBU-format digital audio signals to be output from the unit to digital Betacam VCRs or other equipment.

### DSBK-1602 SDTI (QSDI) Output Board

This interface allows the unit to transfer video, audio and time code signals in SDTI (QSDI) format to the Sony EditStation at normal speed. When this unit is connected to another DVCAM VCR, it is possible to transfer compressed signals from this unit to the connected VCR.

### DSBK-1803 i.LINK/DV Input/Output Board

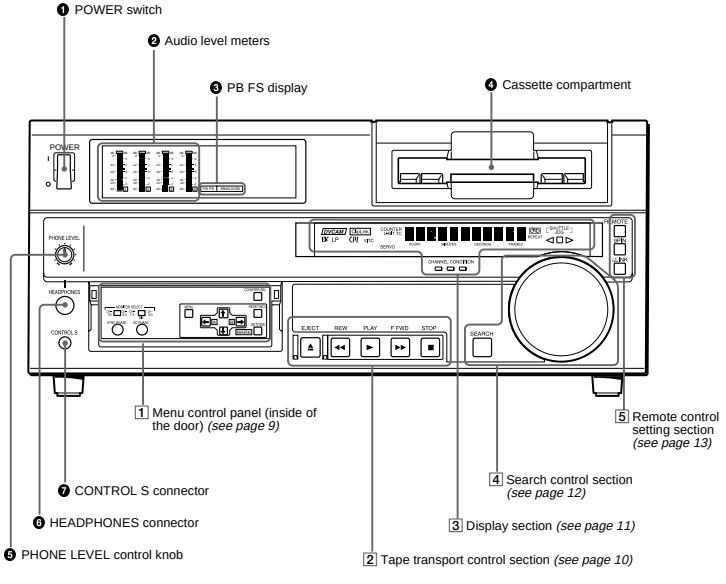
This board allows you to connect the unit to other equipment provided with a Sony DV connector to carry out editing or dubbing of digital video and audio signals.

### RMM-130 Rack Mount Kit

This kit can be used to mount the unit onto an EIA-standard 19-inch rack.

# Location and Function of Parts

## Front Panel


1 POWER switch
2 Audio level meters
3 PB FS display
4 Cassette compartment
1 Menu control panel (inside of the door) (see page 9)
5 Remote control setting section (see page 13)
7 CONTROL S connector
6 HEADPHONES connector
5 PHONE LEVEL control knob
4 Search control section (see page 12)
3 Display section (see page 11)
2 Tape transport control section (see page 10)

**1 POWER switch**
Press the " I " side to power the unit on. When the unit is powered on, the display windows in the front panel lights. To power the unit off, press the " O " side of the switch.

**2 Audio level meters**
These show the audio levels of channels 1 to 4 during playback.

**3 PB FS (playback audio sampling frequency) display**
Indicates the sampling frequency (48 kHz, 44.1 kHz or 32 kHz) at which audio is recorded on tape.

**4 Cassette compartment**
Accepts DVCAM, DV and DVCPRO (25M) videocassettes.

*For details of usable cassettes, see page 19.*

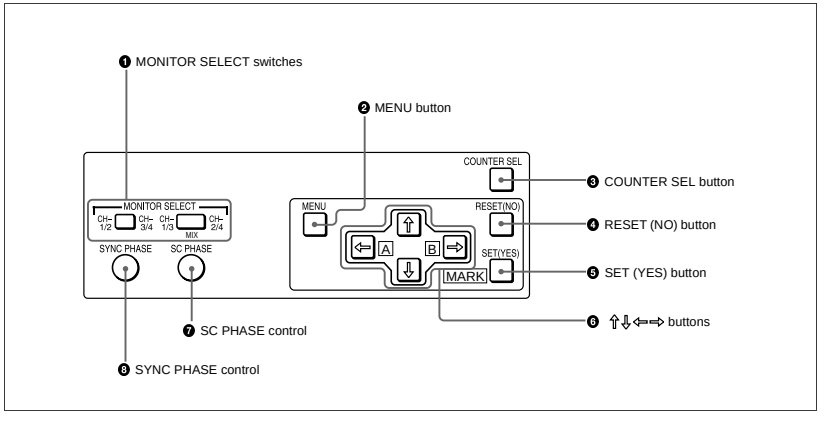
**5 PHONE LEVEL control knob**
Controls the volume of the headphones connected to the HEADPHONES connector.

**6 HEADPHONES connector (stereo phone jack)**
Connect stereo headphones for headphone monitoring during playback.
The audio signal you want to monitor can be selected with the MONITOR SELECT switches on the menu control panel.

**7 CONTROL S connector (stereo minijack)**
Connect a SIRCS-compatible remote control unit such as the DSRM-10.

### 1 Menu control panel

The menu control panel is located on the inside of the door at the lower front of the unit. Pull the top of the door to open it.




**1 MONITOR SELECT switches**
Use these switches to select the channels for audio output via the AUDIO MONITOR OUT connector on the rear panel and the HEADPHONES connector on the front panel.
Use the left switch to select the basic channel setting, then use the right switch to select the output format (monaural, stereo, or mix).

The following table lists the correspondence of left/right switch settings and channel/output format selections.

| Switch setting | | Selected channel and output format | |
|---|---|---|---|
| **Left switch** | **Right switch** | **HEADPHONES connector** | **AUDIO MONITOR OUT connector** |
| CH-1/2 | CH-1/3 MIX | Channel 1 only (monaural) | Channel 1 only (monaural) |
| | CH-1/3 CH-2/4 MIX | Channels 1 and 2 (stereo) | Channels 1 and 2 (mix) |
| | CH-2/4 MIX | Channel 2 only (monaural) | Channel 2 only (monaural) |
| CH-3/4 | CH-1/3 MIX | Channel 3 only (monaural) | Channel 3 only (monaural) |
| | CH-1/3 CH-2/4 MIX | Channels 3 and 4 (stereo) | Channels 3 and 4 (mix) |
| | CH-2/4 MIX | Channel 4 only (monaural) | Channel 4 only (monaural) |

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**❷ MENU button**
Press this button to display the menu on the monitor screen and the time counter display. Press it again to return from the menu display to the usual display.

*On how to use the menu, see Chapter 4 "Menu Settings."*

**❸ COUNTER SEL (selection) button**
Selects the type of time data to be shown in the time counter display. Each press of this button cycles through three indicator display options: COUNTER (CNT: count value of the time counter), TC (time code), and U-BIT (user bits).

**Note**
When the REMOTE button in the remote control setting section is lit, the COUNTER SEL button does not operate. In this case, make the time data selection via the remote equipment that is connected to the REMOTE connector on the rear panel.

**❹ RESET (NO) button**
Press this button to:
- reset menu settings,
- reset the time count (COUNTER) shown in the time counter display to zero, or
- send a negative response to the prompts issued by the unit.

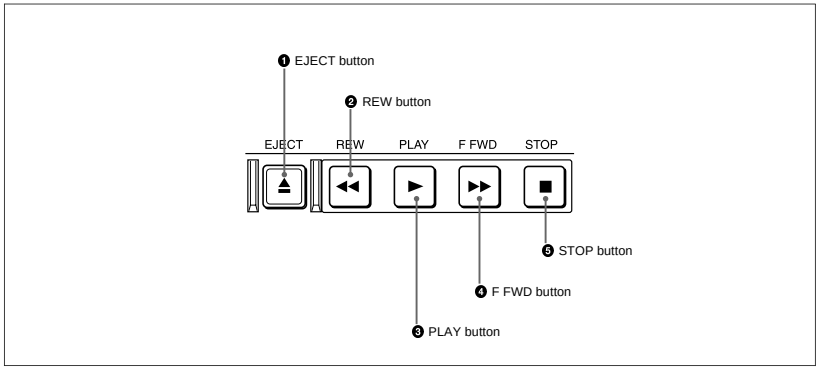
**❺ SET (YES) button**
Press this button to:
- save new menu settings to the memory of the unit,
- confirm the start and end point settings for repeat playback, or
- send a positive response to the prompts issued by the unit.

**❻ Arrow (⇧⇩⇦⇨) buttons**
Use these buttons to move around the menu items, and also to specify and check the repeat playback section.

**❼ SC (subcarrier) PHASE control**
Turn this control to accurately adjust the subcarrier phase of the composite video output signal of the unit with respect to the reference video signal. Use a cross-point (Phillips) screwdriver to turn it.

**❽ SYNC (synchronization) PHASE control**
Turn this control to accurately adjust the synchronization phase of the output video signal of the unit with respect to the reference video signal. Use a cross-point (Phillips) screwdriver to turn it.

## 2 Tape transport control section




**❶ EJECT button**
When you press this button, it lights and the cassette is automatically ejected after a few seconds.

**❷ REW (rewind) button**
When you press this button, it lights and the tape starts rewinding (maximum 85 times normal speed). You can monitor the playback picture during the rewind.

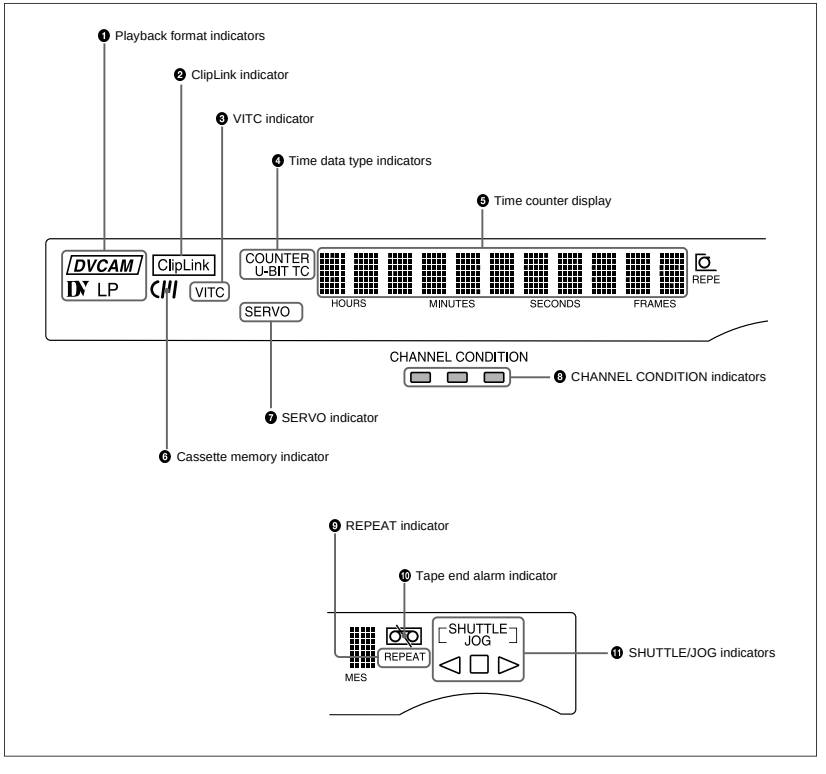
**❸ PLAY button**
When you press this button, it lights and playback begins.

**❹ F FWD (fast forward) button**
When you press this button, it lights and the tape is fast forwarded (maximum 85 times normal speed). You can monitor the playback picture during the fast forward.

**❺ STOP button**
Press this button to stop the current tape transport operation.

**Note**
No tape transport control buttons other than the EJECT and STOP buttons will work while the REMOTE button in the remote control setting section is lit. This can be changed with the LOCAL ENABLE menu item *(see page 40)*.

## 3 Display section




**❶ Playback format indicators**
**DVCAM:** This lights when a tape recorded in DVCAM format is played back.
**DV:** This lights when a tape recorded in consumer DV format is played back.
**LP:** This lights when a tape recorded in LP mode is played back.

When a tape recorded in DVCPRO (25M) format or any other format than those mentioned above is played back, none of the above indicators lights.

**Note**
A tape recorded in LP mode cannot be played back correctly. When a tape recorded in LP mode is played back, "DV LP" flashes and audio is muted.

**❷ ClipLink indicator**
Lights when a cassette is loaded on which ClipLink log data is stored in the cassette memory.

*For details of ClipLink log data, see the appendix "ClipLink Guide" (page 73).*

**❸ VITC indicator**
Lights when VITC is being read regardless of the data shown in the time counter display.

**❹ Time data type indicators**
One of the three indicators (COUNTER, U-BIT, and TC) lights to indicate the type of time data currently shown in the time counter display.
**COUNTER:** Count value of the time counter
**U-BIT:** User bit data
**TC:** SMPTE time code (for DSR-1600) or EBU time code (for DSR-1600P)

**❺ Time counter display**
Indicates the count value of the time counter, time code, VITC, or user bit data depending on the settings of the COUNTER SEL button on the menu control panel and the TC SELECT menu item *(see page 43)*.
Also used to display error messages and setup menu data.

**❻ Cassette memory indicator**
Lights when a cassette provided with a memory chip ("cassette memory") is loaded.

**❼ SERVO indicator**
This indicator lights when the drum servo and capstan servo are locked*.

* Servo lock: This refers to the synchronization of the phase of the drum rotation and the reference signal for the tape transport position, so that the video heads can trace the same pattern on the tape for playback and recording.

**❽ CHANNEL CONDITION indicators**
These three-color indicators show the state of the playback signal.
**Green:** The state of the playback signal is good.
**Yellow:** The playback signal is somewhat deteriorated, but playback is possible.
**Red:** The playback signal is deteriorated. When the red indicator remains on, head cleaning or an internal inspection is necessary.

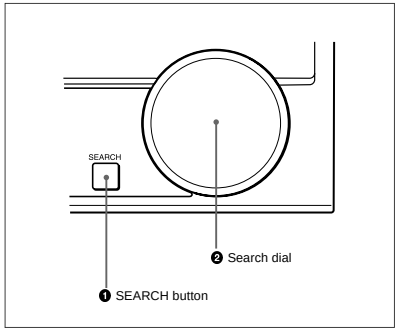
**❾ REPEAT indicator**
This indicator lights when the REPEAT MODE menu item *(see page 40)* is set to ON.

**❿ Tape end alarm indicator**
Starts flashing when the remaining capacity of the tape is for about 2 minutes.

**⓫ SHUTTLE/JOG indicators**
When searching in shuttle mode using the search dial, the SHUTTLE indicator lights, and when searching in jog mode using the search dial, the JOG indicator lights. When the search dial is turned clockwise causing playback to take place in the forward direction, the ▷ indicator lights. When the search dial is turned counterclockwise causing playback to take place in the reverse direction, the ◁ indicator lights. When the tape is stopped, the □ indicator lights.

*For more information about the search dial, see "Search dial" in the next section.*

## 4 Search control section




**❶ SEARCH button**
To use the search dial for playback in shuttle or jog mode, press this button, turning it on. Pressing the dial toggles between shuttle and jog modes. In shuttle mode, the SHUTTLE indicator in the display section lights, and in jog mode, the JOG indicator in the display section lights.

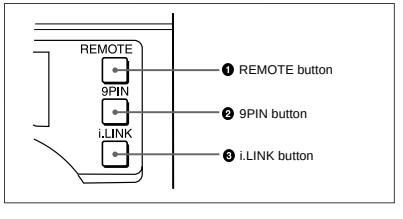
**❷ Search dial**
Turn this to carry out playback in the modes shown in the following table. Turning the dial clockwise lights the ▷ indicator in the display section and plays back in the forward direction. Turning the dial counterclockwise lights the ◁ indicator in the display section and plays back in the reverse direction. When the tape is stopped, the □ indicator in the display section lights.
Pressing this dial toggles playback between shuttle mode and jog mode. When playing back in shuttle mode, the SHUTTLE indicator in the display section lights, and when playing back in jog mode, the JOG indicator lights.
You can carry out noiseless playback in the range of $\pm^1/_2$ times normal speed.

### Playback modes using the search dial

| Playback mode | Operation and functions |
|---|---|
| Shuttle | Press the SEARCH button or the search dial so that the SHUTTLE indicator in the display section lights, then turn the search dial.<br>Playback is carried out at a speed determined by the position of the search dial. The maximum shuttle mode playback speed can be changed with the SHUTTLE menu item *(see page 41)*. |
| Jog | Press the SEARCH button or the search dial so that the JOG indicator in the display section lights, then turn the search dial. Playback is carried out at a speed determined by the speed of rotation of the search dial. The playback speed is up to ±1 times normal speed by factory default.<br>The search dial has no detents. |

You can use the SEARCH ENABLE menu item *(see page 40)* to select either of the following as the operation to be performed to put the unit into search mode (shuttle or jog).
- Either press the SEARCH button or turn the search dial (factory default setting).
- Press the SEARCH button.

## 5 Remote control setting section

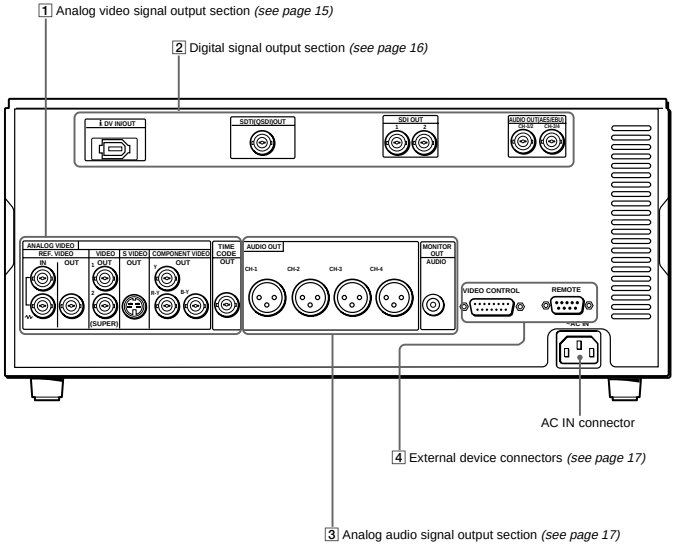



**❶ REMOTE button**
When remote-controlling this unit from the unit connected to the REMOTE connector or i.LINK DV IN/OUT connector, press this button, turning it on.
When reverting to local mode to use the buttons in the tape transport control section, press this button again, turning it off.

**❷ 9PIN button**
When carrying out remote control between this unit and the unit connected to the REMOTE connector, press this button, turning it on.

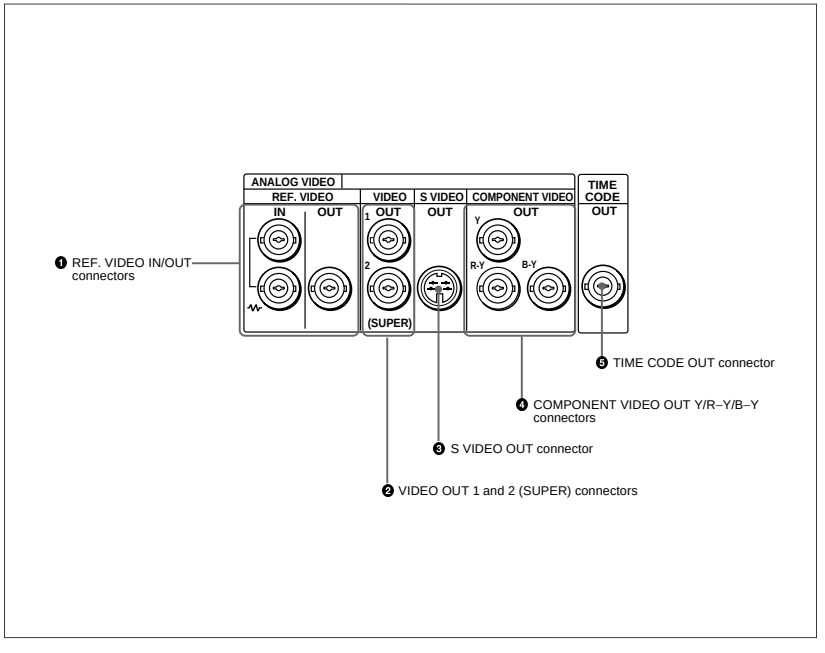
**❸ i.LINK button**
When carrying out remote control between this unit and the unit connected to the i.LINK DV IN/OUT connector, press this button, turning it on. This requires the optional DSBK-1803 board to be installed.

## Rear Panel


1 Analog video signal output section (see page 15)
2 Digital signal output section (see page 16)
AC IN connector
4 External device connectors (see page 17)
3 Analog audio signal output section (see page 17)

**AC IN connector**
Use the supplied power cord to connect this to an AC outlet.

### 1 Analog video signal output section




**❶ REF. (reference) VIDEO IN/OUT connectors (BNC type)**
Input a reference video signal. The IN connector block has a built-in automatic 75 Ω termination switch. When a signal is input to the upper REF. VIDEO IN connector with no bridging (loop-through) connection made, the connector is terminated with an impedance of 75 Ω automatically. To connect the reference video signal input to the upper REF. VIDEO IN connector also to other equipment, use the lower REF. VIDEO IN connector (marked ). When the lower REF. VIDEO IN connector is used, the built-in 75 Ω termination switch turns off automatically.
The REF. VIDEO OUT connector outputs a reference video signal.

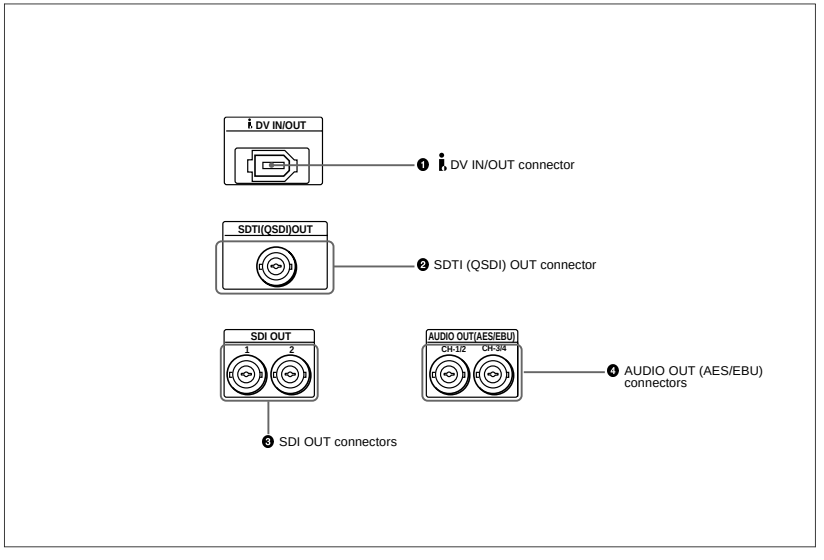
**❷ VIDEO OUT 1 and 2 (SUPER) connectors (BNC type)**
These connectors output analog composite video signals. When the CHARA. DISPLAY menu item *(see page 42)* is set to ON (factory default setting), connector 2 (SUPER) outputs a signal with superimposed text information.

**❸ S VIDEO OUT connector (4-pin)**
This connector outputs an S-video signal with separated Y (luminance) and C (chroma: 3.58 MHz for DSR-1600 or 4.43 MHz for DSR-1600P) components.

**❹ COMPONENT VIDEO OUT Y/R–Y/B–Y connectors (BNC type)**
These connectors output analog component video signals (Y/R–Y/B–Y).

**❺ TIME CODE OUT connector (BNC type)**
Outputs the playback time code.

## 2 Digital signal output section (optional DSBK-1601/1602/1803 boards required)




**❶ i. DV IN/OUT connector (6-pin IEEE-1394) (optional DSBK-1803 i.LINK/DV Input/Output Board required)**

This i.LINK-compatible connector (subsequently referred to also as the i.DV IN/OUT connector) outputs digital video and audio signals in DV format.

**Note**

When searching at speeds in the range $+^{1}/_{2}$ to $+^{1}/_{30}$ or $-^{1}/_{2}$ to $-^{1}/_{30}$ times normal speed, the audio signal output from this connector and monitored on external equipment may sound differently from the audio signal played back on this unit.

**❷ SDTI (QSDI) (Serial Data Transport Interface (QSDI)) OUT connector (BNC type) (optional DSBK-1602 SDTI (QSDI) Output Board required)**

Outputs digital video and audio signals in SDTI (QSDI) format.

**Note**

When searching at speeds in the range $+^{1}/_{2}$ to $+^{1}/_{30}$ or $-^{1}/_{2}$ to $-^{1}/_{30}$ times normal speed, the audio signal output from this connector and monitored on external equipment may sound differently from the audio signal played back on this unit.

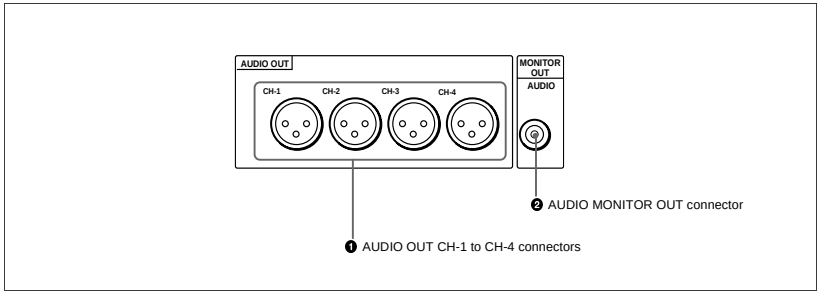
**❸ SDI (Serial Digital Interface) OUT connectors (BNC type) (optional DSBK-1601 SDI/AES/EBU Output Board required)**

Output SDI-format digital video and audio signals. The same signals are output from both connectors.

**❹ AUDIO OUT (AES/EBU) connectors (BNC type) (optional DSBK-1601 SDI/AES/EBU Output Board required)**

These connectors output digital audio signals in AES/EBU format. The left connector (CH-1/2) is for audio channels 1 and 2, and the right connector (CH-3/4) is for audio channels 3 and 4.

## 3 Analog audio signal output section



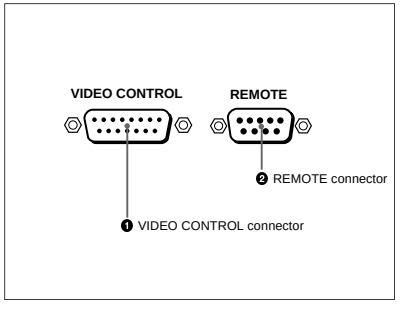

**❶ AUDIO OUT CH-1 (channel 1) to CH-4 connectors (XLR 3-pin, male)**

These connectors output channel-1 to channel-4 analog audio signals, respectively.
It is possible to use the AUDIO OUT CH-3 and AUDIO OUT CH-4 connectors for audio monitor output for channels 1 and 2, respectively (use the OUTPUT CH3/4 menu item *(see page 45)*.

**❷ AUDIO MONITOR OUT connector (RCA phono jack)**

This connector outputs audio signals for monitoring. The audio signals to be output from this connector can be selected with the MONITOR SELECT switches on the menu control panel.

## 4 External device connectors




**❶ VIDEO CONTROL connector (D-sub 15-pin)**

For remote control of the internal digital video processor, connect an optional remote control unit such as the UVR-60/60P or BVR-50/50P to this connector.

**❷ REMOTE connector (D-sub 9-pin)**

When controlling this unit from an editing control unit such as the ES-3, ES-7, PVE-500, BVE-600/800/910/2000, or RM-450/450CE, connect the unit to the editing control unit via this connector using the optional 9-pin remote control cable.

# Chapter 2 Playback

## Playback

This section describes the necessary settings and operations to perform playback on this unit. The same settings and operations apply whether you are using the unit as part of an editing system, for dubbing, or as a stand-alone player VCR.

*For the necessary connections and settings not covered in this section, see Chapter 5 "Connections and Settings."*

### Usable Cassettes

This unit can use the DVCAM cassettes listed below.

| Model name | Size |
|---|---|
| PDV-64ME/94ME/124ME/184ME | Standard size |
| PDVM-12ME/22ME/32ME/40ME | Mini size |

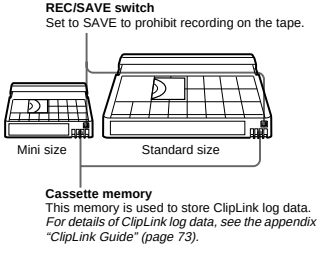
The numbers in each model name indicate the maximum playback time (in minutes) for each model. For example, the PDV-184ME has a maximum playback time of 184 minutes.

**Other usable cassettes**
All consumer DV cassettes and large- and medium-size DVCPRO (25M) cassettes can also be played back on this unit.

**Notes**
- If you insert an incorrect type of cassette, it will be automatically ejected.
- You can also use DV cassettes on the unit. However, it is the best choice to always use DVCAM cassettes because they are more reliable than DV cassettes whatever your purpose may be: playback, editing, or long-period storage of recordings.

### DVCAM cassettes

The following figure illustrates the DVCAM cassettes.


REC/SAVE switch
Set to SAVE to prohibit recording on the tape.
Mini size
Standard size
Cassette memory
This memory is used to store ClipLink log data.
For details of ClipLink log data, see the appendix
"ClipLink Guide" (page 73).

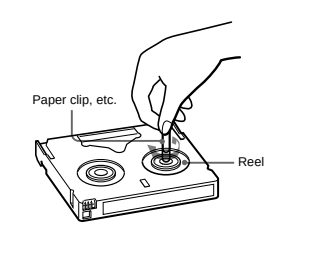
### Notes on using cassettes

- Before storing the cassette for a long period of time, rewind the tape to the beginning and be sure to put the cassette in its storage case, preferably on end instead of flat on its side.
  Storing a cassette in any other condition (not rewound, out of its case, etc.) may cause the video and audio contents to become damaged over time.
- If the cassette memory connector (contact point) becomes dirty, connection problems may occur, causing a loss of functions. Remove away any dust or dirt from this area before using the cassette.
- If the cassette is dropped on the floor or otherwise receives a hard impact, the tape may become slackened and may not play back correctly.

*For information about how to check the tape for slack, see the next section.*

### Checking the tape for slack

Using a paper clip or a similar object, turn the reel gently in the direction shown by the arrow. If the reel does not move, there is no slack. Insert the cassette into the cassette compartment, and after about 10 seconds take it out.



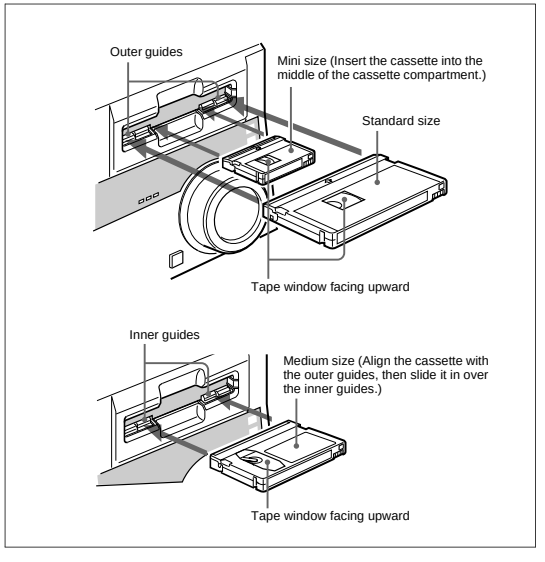





## Inserting and Ejecting Cassettes

### Inserting a cassette

This unit accepts three sizes of cassette: L (standard size), M (medium size: DVCPRO) and S (mini size). When inserting a cassette in the unit, make sure its tape window faces upward as shown in the following figure.

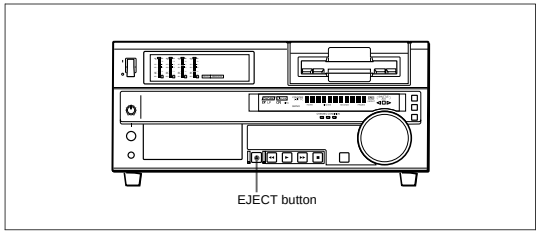

Outer guides
Mini size (Insert the cassette into the middle of the cassette compartment.)
Standard size
Tape window facing upward
Inner guides
Medium size (Align the cassette with the outer guides, then slide it in over the inner guides.)
Tape window facing upward

### No double insertion of cassettes

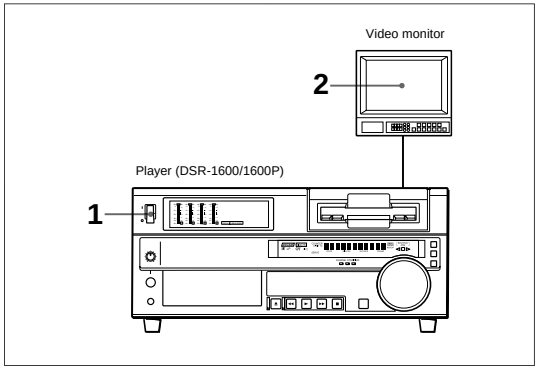
When you insert a cassette, the orange lock-out plate appears in the cassette compartment to prevent double insertion.

### Ejecting a cassette

Press the EJECT button.



## Settings for Playback

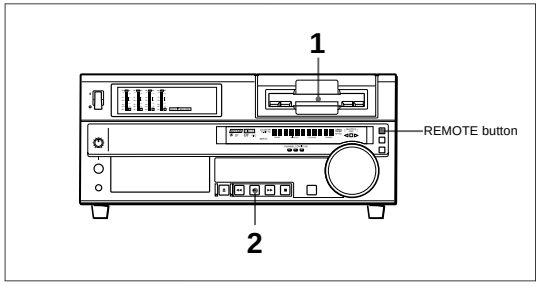



**1** Power on this unit by pressing on the | side of the POWER switch.

**2** Power on the video monitor and set its switches as shown below.

| Switch | Setting |
|---|---|
| 75 Ω termination switch | ON (or attach a 75 Ω terminator.) |
| Input switch | Set according to the type of input signal from this unit. |

## Playback Procedure




**Note**

When controlling this unit from an editing control unit connected to the REMOTE connector on this unit, press the REMOTE button to turn it on. When not, turn the button off.

**1** Insert a cassette.

*For details of cassette insertion see page 21, and for usable cassette types see page 19.*

The cassette is automatically drawn into the unit. The STOP button will light, and a few seconds later a still image will appear on the monitor screen.

**2** Press the PLAY button.

This starts the playback operation. When the tape is played back all the way to the end, the unit automatically rewinds it and then stops.

**If the following indicators light when a cassette is loaded**

| Indicator | It means: |
|---|---|
| Cassette memory indicator | The loaded cassette contains a cassette memory. |
| ClipLink indicator | There is ClipLink log data stored in the cassette memory on the loaded cassette. |

**To perform the following operations**

| Operation | Do this: |
|---|---|
| Stop playback. | Press the STOP button.<br>The unit enters stop mode, and will automatically switch to standby off mode after the time set with the STOP TIMER menu item *(see page 43).* |
| Adjust the audio playback level. | Use the audio level control on the monitor. |
| Play back in shuttle mode while monitoring the video. | Press the SEARCH button or search dial to light the SHUTTLE indicator in the display section, then rotate the search dial.<br>Playback is carried out at the speed determined by the angular position of the search dial.<br>The maximum speed for shuttle playback can be changed using the SHUTTLE menu item *(see page 41).* |
| Play back in jog mode while monitoring the video. | Press the SEARCH button or search dial to light the JOG indicator in the display section, then rotate the search dial.<br>Playback is carried out at the speed according to the speed of the search dial rotation. The playback speed range is ±1 times normal speed by factory default.<br>The search dial has no detents. |
| Inhibit the unit from outputting text information (time data, operation mode indications, etc.) to the video monitor. | Set the CHARA. DISPLAY menu item *(see page 42)* to OFF. |
| Remove the cassette. | Press the EJECT button.<br>If a CNT value is shown on the time counter display, the CNT value is reset. |
| Disable the automatic rewind function. | Set the AUTO REW menu item *(see page 41)* to DISABLE. |
| Change the time period before the unit switches from stop mode to standby off mode. | Change the setting of the STOP TIMER menu item *(see page 43).* |







## Repeat Playback—Automatic Cyclical Playback

Proceed as follows to perform automatic cyclical playback of recording (repeat playback) between selected start and end points.

**1** Set the desired repeat start and end points using the REPEAT FUNCTION menu item *(see page 40)*.
You can set points A and B as start and end points by following the procedure described in the next section.

**2** Set the REPEAT MODE menu item *(see page 40)* to ON.

The REPEAT indicator lights.

**3** Press the SET (YES) button to save the new setting and close the menu.

**4** Press the PLAY button.

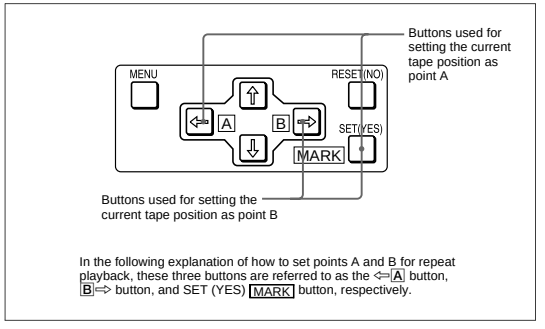
The unit repeats playback between the repeat start and end points set in step **1**.

## Setting Points A and B for Repeat Playback

You can set the repeat playback start point (point A) and end point (point B) by using the current tape position or inputting time code values.
To perform repeat playback after setting points A and B, press the PLAY button when the REMOTE button is off. When the DSRM-10 Remote Control Unit is connected to the CONTROL S connector on the front panel, you can also start repeat playback by pressing its PLAY button with the REMOTE button of this unit off.

### Setting the current tape position as point A or B

Proceed as follows to set the current tape position as point A or B for repeat playback.




In the following explanation of how to set points A and B for repeat playback, these three buttons are referred to as the ⇦A button, B⇨ button, and SET (YES) MARK button, respectively.

While holding down the SET (YES) MARK button on the menu control panel, press the ⇦A or B⇨ button. The time code value of the current tape position is set as point A or B, and a message “A set” or “B set” is displayed for 0.5 second in the time counter display.

Once set, the point A or B time code value is held in the non-volatile memory of the unit until changed. It is not lost when the unit is powered off.

**Note**

When setting point A or B, you can only use a time code value. Even when COUNTER is selected with the COUNTER SEL button, you cannot use a CNT value to set point A or B.

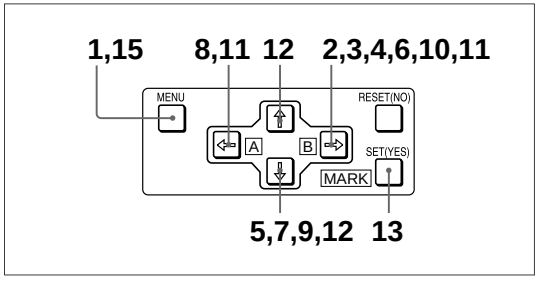
**To check the point A or B time code value**

Press the ⇦A or B⇨ button on the menu control panel. While the button is held down, the point A or B time code value is displayed on the monitor and in the time counter display.

If you hold down the ⇦A and B⇨ buttons simultaneously, the value shown is the point B time code value minus the point A time code value. If the point A time code value is greater than the point B time code value, a minus sign (–) is shown before the value.

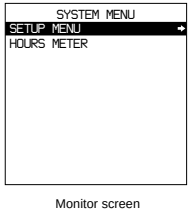
## Inputting time code values for points A and B

Using the following procedure, you can modify the time code value for point A or B.




**1** Press the MENU button.

The following menu display appears.




Monitor screen

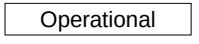
Time counter display



**2** With “SETUP MENU” selected, press the B⇨ button.

The display changes as follows.

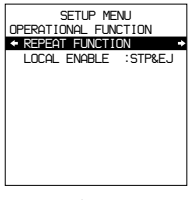
Monitor screen




Time counter display

**3** With “OPERATIONAL FUNCTION” selected, press the B⇨ button.

The display changes as follows.

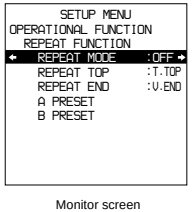



Monitor screen

Time counter display

**4** With “REPEAT FUNCTION” selected, press the B⇨ button.

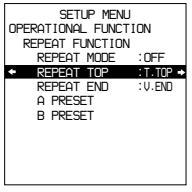
The contents of the REPEAT FUNCTION menu item are displayed.




Monitor screen

Time counter display

**5** Press the ⇩ button to select “REPEAT TOP.”



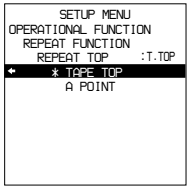

Monitor screen

>> REP TOP

Time counter display

**6** Press the B⇨ button.

The display changes as follows.

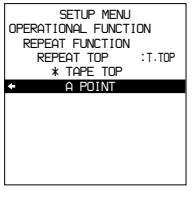



Monitor screen

>>> Tape top

Time counter display

**7** Press the ⇩ button to select “A POINT.”




Monitor screen

>>> A point

Time counter display



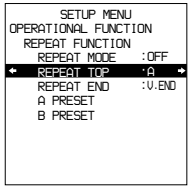






**8** Press the ⇦A button.

The display changes as follows.

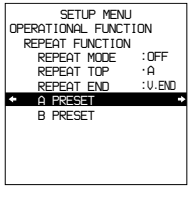



Monitor screen

>> REP TOP

Time counter display

**9** Press the ⇩ button to select “A PRESET.”



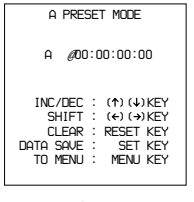

Monitor screen

>> A preset

Time counter display

**10** Press the B⇨ button.

The A PRESET MODE screen appears. The time code value of the current point A is displayed below the screen title.




Monitor screen

**11** Use the ⇦A or B⇨ button to select the digit in the time code value display that you want to change.

Each press of the button causes the digit to the left or right to begin flashing. Holding the button down moves the flashing digit continuously. If you want to clear the time code value, press the RESET (NO) button. The value is cleared to 00:00:00:00, and the leftmost digit begins flashing.

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**12** Press the ⇧ or ⇩ button to increment or decrement the value of the flashing digit.

Each press of the button increments or decrements the value. Holding the button down increments or decrements the value continuously. To change other digits, return to step **11**.

**13** Press the SET (YES) MARK button to confirm the defined value.

The message “NOW SAVING...” is displayed on the monitor screen and “Saving...” is shown in the time counter display while the new setting is being saved in memory.

**Caution**

The new setting may be lost if you power off the unit during the saving operation. Wait until the saving operation is completed before powering off the unit.

**If you want to discard the changed value**

Press the MENU button instead of pressing the SET (YES) MARK button to return to the menu display, then press the MENU button again to end the menu operation without saving the changed value into memory.

After the saving operation is completed, the monitor screen and time counter display return to the REPEAT FUNCTION setting display as shown in step **9**.

**14** To set point B, refer to steps **5** to **13**. (Select “REPEAT END” in step **5**, “B POINT” in step **7,** and “B PRESET” in step **9**.)

**15** Press the MENU button to close the menu.

## Cuing Up to Any Desired Position Set as Point A or B

You can set any desired tape position as point A or B and cue up to the set point when required. To cue up to point A or B, holding down the ⇦A or B⇨ button on the menu control panel, press the REW button in the tape transport control section.

*For the methods of setting points A and B, see the previous section.*



# Chapter 3 Convenient Functions for Editing Operation

## Displaying Time Data and Other Text Information

This unit allows time data and operation mode indications to be displayed on the monitor screen.
Time data can also be displayed in the time counter display on the unit.

### Displaying Time Data and Operation Mode Indications

The unit is provided with the following functions related to time data.

- Display and reset CNT value
- Display and play back SMPTE/EBU time code and user bit data
- Display and play back VITC

The unit can output the time code read from the tape as an analog (LTC) signal while in normal-speed playback mode.

**Note**

The unit outputs no signal from the TIME CODE OUT connector unless it is in normal-speed playback mode.

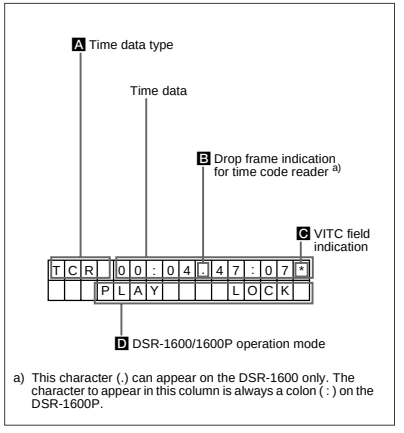
#### To view time data and operation mode indications on the monitor screen

Set the CHARA. DISPLAY menu item *(see page 42)* to ON (factory default setting).
The time data and the indication of the current operation mode are superimposed on the video signal that is being output from the VIDEO OUT 2 (SUPER) connector, and can be viewed on the monitor screen.

Use the DISPLAY CONTROL menu items *(see page 42)* to select the information displayed and the character type and position of the indications.

#### Monitor screen contents

The contents of the monitor screen are shown below.




a) This character (.) can appear on the DSR-1600 only. The character to appear in this column is always a colon ( : ) on the DSR-1600P.

### A Time data type

The following time data type indications are displayed.

| Indication | Description |
|---|---|
| CNT | Count value of the time counter |
| TCR | Time code data from time code reader (factory default setting) |
| UBR | User bit data from time code reader |
| TCR. | Time code data from VITC reader a) |
| UBR. | User bit data from VITC reader a) |
| T*R b) | Time code data from time code reader. The asterisk indicates an interpolation by the time code reader to make up for the time code data not correctly read from the tape. |
| U*R b) | User bit data from the time code reader. The asterisk indicates that last data is retained by the time code reader, as the new data has not been read correctly from the tape. |

a) You can switch between TC and VITC using the TC SELECT menu item *(see page 43)*.
b) "*" is displayed when data cannot be read in correctly.

### B Drop frame indication for time code reader (on DSR-1600 only)

| | |
|---|---|
| . | Drop frame mode (factory default setting) |
| : | Non-drop frame mode |

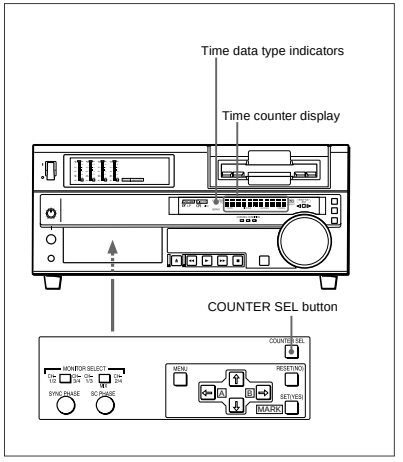
### C VITC field indication

| | |
|---|---|
| (blank) | Display fields 1 and 3. |
| * | Display fields 2 and 4. |

### D DSR-1600/1600P operation mode

| Display | Operation mode |
|---|---|
| CASSETTE OUT | Cassette is not loaded. |
| THREADING | Tape loading |
| UNTHREADING | Tape unloading |
| STANDBY OFF | Standby off mode |
| T. RELEASE | Tape tension released |
| STOP | Stop mode |
| F. FWD | Fast forward mode |
| REW | Rewind mode |
| PREROLL | Preroll mode |
| PLAY | Playback mode (servo unlocked) |
| PLAY LOCK | Playback mode (servo locked) |
| PLAY-PAUSE | Temporary stop of playback |
| JOG STILL | Still picture in jog mode |
| JOG FWD | Jog mode in forward direction |
| JOG REV | Jog mode in reverse direction |
| SHUTTLE (Speed) | Shuttle mode |

## To display the desired time data in the time counter display




Open the door on the lower part of the front panel, and press the COUNTER SEL button.
Each press of this button cycles through three options: CNT value, time code, and user bit data. The time data type indicator for each option lights as it is selected.

| Time data type indicator | Time data shown in the time counter display |
|---|---|
| COUNTER | CNT (count value of the time counter) |
| TC | Time code |
| U-BIT | User bit data |

**Note**

When the REMOTE button is lit, the COUNTER SEL button does not operate while the tape is moving. In such cases, use the external equipment connected to the REMOTE connector on the rear panel to select the time data.

### To reset the CNT value

Press the RESET (NO) button on the menu control panel. This resets the CNT value to 0:00:00:00.

**Note**

During playback, if the recording on the tape includes discontinuities, the counter may operate incorrectly at the corresponding points.

# High-Speed and Low-Speed Search—Quickly and Accurately Determining Editing Points

Use the search function to easily locate the desired scene and to quickly and accurately determine edit points.

## Search Operations via External Equipment

You can control the unit in the following operation modes from an editing control unit (ES-7, PVE-500, etc.) connected to the REMOTE connector on the rear panel or from a SIRCS-compatible remote control unit such as the DSRM-10 connected to the CONTROL S connector on the front panel.

**Shuttle:** Use this mode to view color video playback at speeds ranging from 0 to 60 times normal speed in both directions.

**Note**

When controlling the unit from the DSRM-10 for shuttle-mode search, the maximum search speed is 16 times normal speed in both directions.

**Jog:** Use this mode for low-speed search and frame-by-frame search.

**Digital slow:** Use this mode for noise-free color video playback at speeds ranging from 0 to $^{1}/_{2}$ times normal speed in both directions.

**Still:** Use this mode to view a still picture of any field.

**Jog audio:** Use this mode to monitor the audio at speeds ranging from 1 to $^{1}/_{30}$ times normal speed in both directions.

**Note**

When controlling this unit from external equipment, be sure to turn on or off the buttons in the remote control setting section on the front panel as shown in the following table.

| External equipment | Buttons in the remote control setting section |
|---|---|
| Editing control unit connected to the REMOTE connector | Turn on both the REMOTE and 9PIN buttons. |
| SIRCS-compatible remote control unit connected to the CONTROL S connector | Turn off the REMOTE button. |
| Equipment connected to the i.DV IN/OUT connector | Turn on both the REMOTE and i.LINK buttons. |

*For description on how to carry out search operations via external equipment, see the operating instructions for the equipment.*

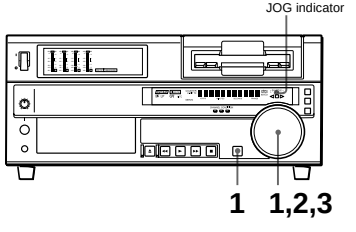
## Search Operations on This Unit

When you perform searching on this unit, be sure to turn off the REMOTE button on the front panel.

### Playing back in jog mode

In jog mode, you can control the speed of playback by the speed of turning the search dial. The playback speed range is ±1 times normal speed by factory default. The speed variation range and pattern can be changed with the JOG RESPONSE menu item *(see page 41)*.

To carry out playback in jog mode, use the following procedure.




**1** Press the SEARCH button or search dial so that the JOG indicator in the display section is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

**2** Turn the search dial in the desired direction at the speed corresponding to the desired playback speed.

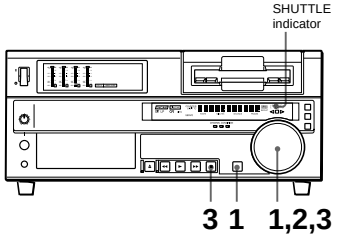
Playback in jog mode starts.

**3** To stop playback in jog mode, stop turning the search dial.

### Playing back in shuttle mode

In shuttle mode, you can control the speed of playback by the angular position of the search dial. The range of playback speed is ±32 times normal speed by factory default. You can change the playback speed range with the SHUTTLE menu item *(see page 41)*. The search dial has detents at the positions of still image and ±10 times normal speed.

To carry out playback in shuttle mode, use the following procedure.




**1** Press the SEARCH button or search dial so that the SHUTTLE indicator in the display section is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

**2** Turn the search dial to the desired angle corresponding to the desired playback speed.

Playback in shuttle mode starts.

**3** To stop playback in shuttle mode, return the search dial to the center position, or press the STOP button.

**To return to normal-speed playback**

Press the PLAY button.

**To alternate between normal-speed playback and shuttle mode playback**

Set the search dial to the position corresponding to the desired shuttle playback speed, then switch between normal-speed playback and shuttle playback by pressing the PLAY and SEARCH buttons alternately.

For intermittent shuttle mode playback, press the STOP and SEARCH buttons alternately.

# Chapter 4 Menu Settings

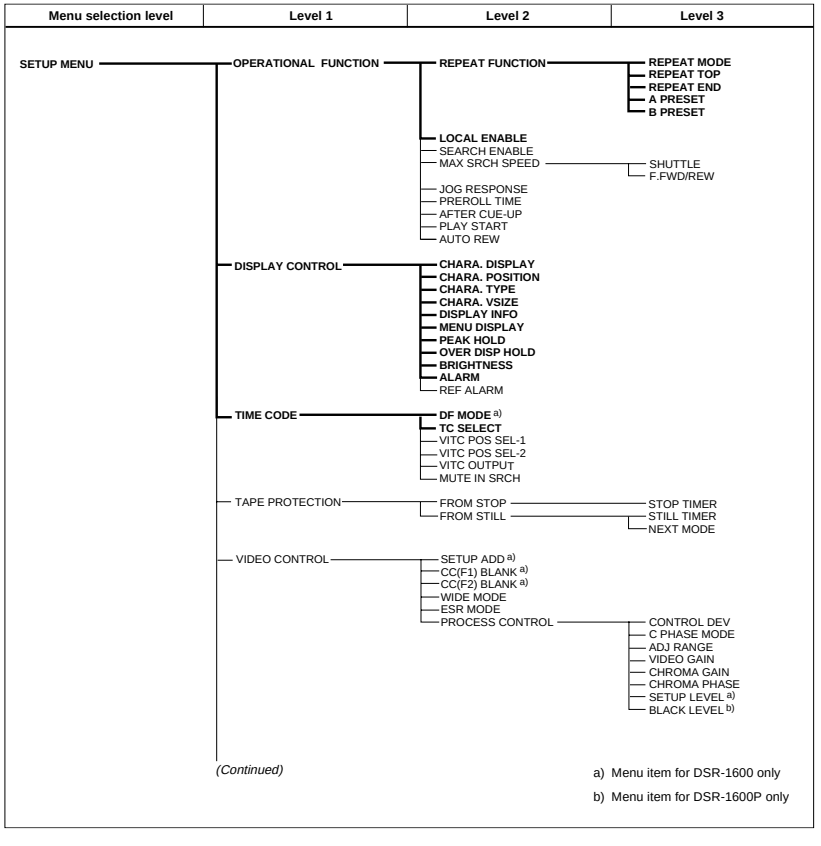
## Menu Organization

As shown in the following figure, the menu system consists of four levels and is functionally divided into two subsystems: the setup menu and the digital hours meter display menu. This chapter mainly describes the setup menu, showing its contents and how to operate it.

*For details of the digital hours meter display, see "Regular Checks" (page 63).*

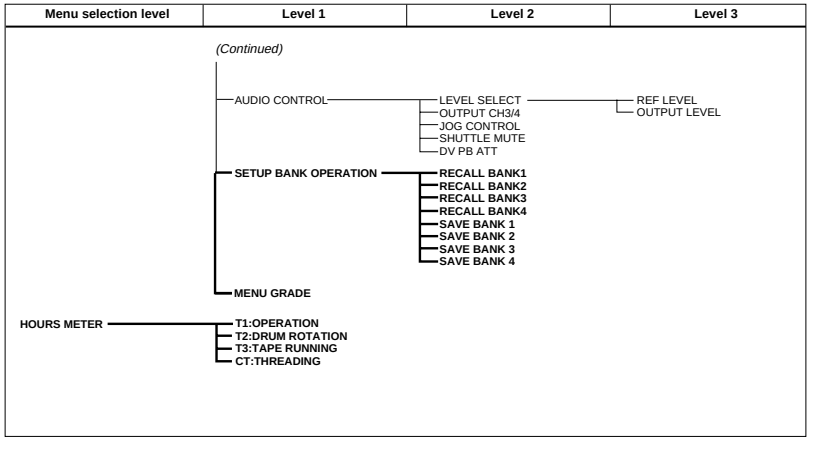
The items of the setup menu are divided into several functional groups on level 1, and except for the MENU GRADE item the settings themselves are made on level 2 or level 3.
Also, the menu items are divided into two categories according to how frequently they are accessed: the "basic" items, to which frequent access is normally required, and the "enhanced" items, which are less frequently used. In the following figure, the items shown in boldface are basic items, and the other items are enhanced items.
The menu settings are saved in non-volatile memory, which means they are not erased when you power off the unit after executing the setting operation.

## Menu organization







# Menu Contents

## Setup Menu

The purpose and settings of the setup menu items are described below.

### Indications of menu items and settings

- In the table below entitled “Menu contents,” the indication of each menu item or setting on the monitor screen is shown first, then the indication of the same item or setting in the time counter display of this unit is shown in square brackets ([ ]).

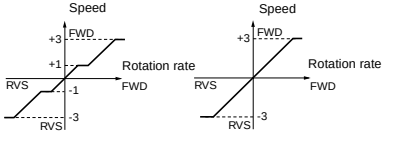
**Examples:**

| Indication on monitor screen | Indication in time counter display |
|---|---|
| OPERATIONAL FUNCTION | [Operational] |
| CASSETTE OUT | [>> Cass. out] |
| *X32 | [>>> X32] |

- Settings preceded by an asterisk (such as *X32) are factory default settings.
- In the time counter display, one to three “>” symbols may precede item or setting indications depending on the current menu level. Larger numbers of “>” symbols indicate lower menu levels.

### Menu contents

| OPERATIONAL FUNCTION [Operational]: Operation settings | | Description of settings |
|---|---|---|
| **REPEAT FUNCTION [>REP FUNC]:** Make settings for repeat playback mode. | **REPEAT MODE [>>REPEAT MD]:** Determine whether or not to put the unit into repeat playback mode. | ***OFF [>>> OFF]:** Do not put the unit into repeat playback mode.<br>**ON [>>> ON]:** Put the unit into repeat playback mode.<br>**ON (FREEZE) [>>> FREEZE]:** Put the unit into freeze playback mode. In this case, while the unit is cueing up to the repeat start point, the freeze picture of the repeat end point is displayed. |
| | **REPEAT TOP [>>REP TOP]:** Determine whether the repeat start point is the beginning of tape or point A. | ***TAPE TOP [>>>Tape top]:** The repeat start point is the beginning of tape.<br>**A POINT [>>>A point]:** The repeat start point is point A as set by the user. |
| | **REPEAT END [>>REP END]:** Determine whether the repeat end point is the end of the video recorded portion, the end of tape or point B. | ***VIDEO END [>>>VD end]:** The repeat end point is the end of the video recorded portion.<br>**TAPE END [>>>Tape end]:** The repeat end point is the end of tape.<br>**B POINT [>>>B point]:** The repeat end point is point B as set by the user. |
| | **A PRESET [>>A preset]:** Specify a time code value to be used as the setting of point A. | *For details, see “Setting Points A and B for Repeat Playback” on page 25.* |
| | **B PRESET [>>B preset]:** Specify a time code value to be used as the setting of point B. | *For details, see “Setting Points A and B for Repeat Playback” on page 25.* |
| **LOCAL ENABLE [> Local ENA]:** Select which of the tape transport control buttons (EJECT, REW, PLAY, F FWD, and STOP) operate when the REMOTE button is lit. | | **ALL DISABLE [>> All DIS]:** All of the tape transport control buttons are disabled.<br>***STOP & EJECT [>> STOP & EJ]:** Only the STOP and EJECT buttons are enabled.<br>**ALL ENABLE [>> All ENA]:** All of the tape transport control buttons are enabled, and settings such as preroll time change or time data display selection are effective. |
| **SEARCH ENABLE [>Search ENA]:** Select how the unit enters the search mode. | | ***DIAL DIRECT [>> DIAL]:** Press the SEARCH button or, except during editing, turn the search dial.<br>**VIA SEARCH KEY [>> via KEY]:** Press the SEARCH button. |

| OPERATIONAL FUNCTION [Operational]: Operation settings | | Description of settings |
|---|---|---|
| **MAX SRCH SPEED [>Max SRCH]:** Specify the maximum tape speed in search mode (shuttle) and F.FWD (fast forward)/REW (rewind) mode. | **SHUTTLE [>>SHUTTLE]:** Specify the maximum tape speed in search mode (shuttle). | **X60 [>>> X60]:** Maximum 60 times normal speed<br>***X32 [>>> X32]:** Maximum 32 times normal speed<br>**X16 [>>> X16]:** Maximum 16 times normal speed |
| | **F.FWD/REW [>>F.FWD/REW]:** Specify the maximum tape speed in F.FWD/REW mode. | **MAX [>>> MAX]:** No maximum tape speed is specified.<br>***X85 [>>> X85]:** Maximum 85 times normal speed<br>**X60 [>>> X60]:** Maximum 60 times normal speed<br>**X32 [>>> X32]:** Maximum 32 times normal speed<br>**Note**<br>When this item is set to MAX, the playback video signal is muted. |
| **JOG RESPONSE [>JOG dial]:** Select the tape speed characteristics for the search dial rotation rate in jog mode. | | ***TYPE1 (-1 to +1) [>> type 1]:** Tape speed varies linearly over the range –1 to +1.<br>**TYPE2 (-3 to +3) [>> type 2]:** Tape speed varies stepwise as shown in the figure below over the range –3 to +3. (Characterized by a zone around –1 and +1 where the tape speed is independent of the rotation rate)<br>**TYPE3 (-3 to +3) [>> type 3]:** Tape speed varies linearly over the range –3 to +3, as shown in the figure below.<br>**TYPE2** **TYPE3**<br>  |
| **PREROLL TIME [> Preroll]:** Set the preroll time. | | **0 SEC [>> 0 sec] to 15 SEC [>> 15 sec]:** The preroll time can be set in one-second increments to between 0 and 15 seconds.<br>A preroll time of at least 5 seconds is recommended when using this unit for editing. When an editing control unit such as the PVE-500 has been connected, this setting is disabled and the setting on the editing control unit is in effect. Operations such as the preroll time setting and the time data switching operation are also performed on the editing control unit.<br>**Factory default setting:** 5 SEC [>> 5 sec] |
| **AFTER CUE-UP [> After CUE]:** Select the operating mode following cue-up. | | ***STOP [>> STOP]:** Stop mode<br>**STILL [>> STILL]:** Output still pictures in search mode. |
| **PLAY START [> PLAY start]:** Set the timing for switching from stop mode to playback mode.<br>In an editing system including an editing control unit such as the PVE-500, you can adjust this setting so that the delay before switching to playback mode is the same on all the decks of the editing system. It is then no longer necessary to synchronize the decks for editing, and the preroll time can be shortened. | | **16 FRAME DELAY [>> 16 delay] to 4 FRAME DELAY [>> 4 delay]:** The larger the numerical value, the longer the delay. By adjusting this setting, it is possible to reduce the phase synchronization time and preroll time during editing.<br>**Factory default setting:** 5 FRAME DELAY [>> 5 delay] (for DSR-1600) or 4 FRAME DELAY [>> 4 delay] (for DSR-1600P) |
| **AUTO REW [>Auto REW]:** Select whether to rewind the tape automatically when recording or playback reaches the end of a tape. | | **DISABLE [>> DISABLE]:** Do not rewind the tape automatically.<br>***ENABLE [>> ENABLE]:** Rewind the tape automatically. |

| DISPLAY CONTROL [Display]: Settings related to indications on the monitor and the unit | Description of settings |
|---|---|
| **CHARA. DISPLAY [> Chara disp]:** Determine whether or not to output text (such as time code values) from the VIDEO OUT 2 (SUPER) connector. | **OFF [>> OFF]:** Do not output text. (In spite of this setting, pressing the MENU button causes menu text to be output.)<br>***ON [>> ON]:** Output text. |
| **CHARA. POSITION [> Chara pos]:** Set the position of text superimposed on output from the VIDEO OUT 2 (SUPER) connector to the monitor. | Use ⇧⇩⇦⇨ buttons on the menu control panel to adjust the text position while watching the monitor screen.<br>To return to the level 1 of the setup menu, press the MENU button. |
| **CHARA. TYPE [> Chara type]:** Set the type of characters in text superimposed on output from the VIDEO OUT 2 (SUPER) connector to the monitor. | Make the following settings while watching the monitor screen.<br>***WHITE (WITH BKGD) [>> White]:** White characters on black background<br>**BLACK (WITH BKGD) [>> Black]:** Black characters on white background<br>**WHITE/OUTLINE [>> W/outline]:** White characters with black outline<br>**BLACK/OUTLINE [>> B/outline]:** Black characters with white outline |
| **CHARA. VSIZE [> Chara size]:** Determine the vertical size of characters such as time code output from the VIDEO OUT 2 (SUPER) connector for superimposed display on the monitor. | ***×1 [>> ×1]:** Standard size<br>**×2 [>> ×2]:** 2 times standard size |
| **DISPLAY INFO [> DISP info]:** Select information superimposed on output from the VIDEO OUT 2 (SUPER) connector to the monitor. | ***TIME DATA & STATUS [>> Time&STA]:** Time data and operating mode indications<br>**TIME DATA & UB [>> Time&UB]:** Time data selected using the COUNTER SEL button, and user bit data (When user bit data is selected using the COUNTER SEL button, user bit data and time code are shown.)<br>**TIME DATA & CNT [>> Time&CNT]:** Time data selected using the COUNTER SEL button, and CNT value (When CNT is selected using the COUNTER SEL button, CNT value and time code are shown.)<br>**TIME DATA & TIME[>> Time&Time]:** Time data and VITC<br>**TIME DATA ONLY [>> Time]:** Time data only<br>**REC DATE & TIME [>> REC Date]:** The time data selected with the COUNTER SEL button is shown in the time counter display, and the date and time of recording are shown on the monitor screen. |
| **MENU DISPLAY [> Menu DISP]:** Set the type of characters in menu text superimposed on output from the VIDEO OUT 2 (SUPER) connector to the monitor. | Make the following settings while watching the monitor screen.<br>***WHITE (WITH BKGD) [>> White]:** White characters on black background<br>**BLACK (WITH BKGD) [>> Black]:** Black characters on white background<br>**WHITE/OUTLINE [>> W/outline]:** White characters with black outline<br>**BLACK/OUTLINE [>> B/outline]:** Black characters with white outline |
| **PEAK HOLD [>Peak hold]:** Set the peak hold time for the audio level meters. | **OFF [>> OFF] to 1.5 SEC [1.5 sec]:** Set the peak hold time in the range of OFF (no peak hold) to 1.5 seconds in 0.1 second steps.<br>**Factory default setting:** OFF [>> OFF] |
| **OVER DISP HOLD [> Hold OVER]:** Determine whether or not to hold the OVER indication display on the audio level meters once the indications light. | ***OFF [>> OFF]:** Do not hold the OVER indication display.<br>**ON (HOLD) [>> ON]:** Hold the OVER indication display.<br><br>**Note**<br>With ON selected, once the display is held it will remain held unless you change the setting to OFF. |
| **BRIGHTNESS [> Brightness]:** Set the brightness of front panel indicators. | Set brightness as a percentage of the maximum.<br>**100% [>> 100%]**<br>***75% [>> 75%]**<br>**50% [>> 50%]** |





| DISPLAY CONTROL [Display]: Settings related to indications on the monitor and the unit | Description of settings |
|---|---|
| **ALARM [> ALARM]:** Determine whether alarm messages are issued or not. | **OFF [>> OFF]:** Alarm messages are not issued.<br>***ON [>> ON]:** Alarm messages are issued. |
| **REF ALARM [> REF ALARM]:** Determine whether alarm messages related to reference video signal are issued or not. | ***OFF [>> OFF]:** Alarm messages are not issued.<br>**ON [>> ON]:** Alarm messages are issued. |

| TIME CODE [Time code]: Settings related to the time code generator | Description of settings |
|---|---|
| (For DSR-1600 only)<br>**DF MODE [> DF mode]:** Select whether the time counter operate in drop frame mode or non-drop frame mode. Normally select drop frame mode, to keep in synchronization with real time. The non-drop frame mode is useful for example when using computer graphics, and working on a frame count basis. | ***ON (DF) [>> ON (DF)]:** Drop frame mode<br>**OFF (NDF) [>> OFF (NDF)]:** Non-drop frame mode |
| **TC SELECT [>TC select]:** Determine which to display in the time counter display, TC or VITC. | **VITC [>> VITC]:** Display VITC.<br>***TC [>> TC]:** Display TC. |
| **VITC POS SEL-1 [>VITC pos-1]:** Select a line to insert the VITC in.<br><br>**Note**<br>You can insert the VITC signal in two places. To insert it in two places, set both this item and also VITC POS SEL-2. | (For DSR-1600)<br>**12 LINE [>> 12 line] to 20 LINE [>> 20 line]:** Select any line from 12 to 20.<br>**Factory default setting:** 16 LINE [>> 16 line] |
| | (For DSR-1600P)<br>Select a line to insert the VITC in.<br>**9 LINE [>> 9 line] to 22 LINE [>> 22 line]:** Select any line from 9 to 22.<br>**Factory default setting:** 19 LINE [>> 19 line] |
| **VITC POS SEL-2 [>VITC pos-2]:** Select a line to insert the VITC in.<br><br>**Note**<br>You can insert the VITC signal in two places. To insert it in two places, set both this item and also VITC POS SEL-1. | (For DSR-1600)<br>**12 LINE [>> 12 line] to 20 LINE [>> 20 line]:** Select any line from 12 to 20.<br>**Factory default setting:** 18 LINE [>> 18 line] |
| | (For DSR-1600P)<br>Select a line to insert the VITC in.<br>**9 LINE [>> 9 line] to 22 LINE [>> 22 line]:** Select any line from 9 to 22.<br>**Factory default setting:** 21 LINE [>> 21 line] |
| **VITC OUTPUT [>VITC out]:** Select the time code to be output as VITC. | **OFF [>> OFF]:** Do not output VITC.<br>**TC [>> TC]:** Output TC after converting it into VITC.<br>***VITC [>> VITC]:** Output VITC. |
| **MUTE IN SRCH [>Mute in SR]:** Select whether to mute the output from the TIME CODE OUT connector in search (jog/shuttle) mode. | **OFF [>> OFF]:** Do not mute.<br>***ON [>> ON]:** Mute. |

| TAPE PROTECTION [Tape protct]: Settings related to tape and video head protection | | Description of settings |
|---|---|---|
| **FROM STOP [> From STOP]:** Set the time to switch from stop mode to tape protection mode. | **STOP TIMER [>> STP timer]:** Set the time to switch from stop mode to tape protection mode. | **5 MIN [>>> 5 min] to 0.5 SEC [>>> 0.5 sec]:** Select time from 12 settings ranging from 0.5 second to 5 minutes in steps of 0.1 second.<br>**Factory default setting:** 1MIN [>>> 1min] |

| TAPE PROTECTION [Tape protct]: Settings related to tape and video head protection | | Description of settings |
|---|---|---|
| **FROM STILL [> From STILL]:** Set the time to switch from still search mode to tape protection mode. Also select the type of tape protection mode. | **STILL TIMER [>> STL timer]:** Set the time to switch from still search mode to tape protection mode. | **5 MIN [>>> 5 min] to 0.5 SEC [>>> 0.5 sec]:** Select time from 12 settings ranging from 0.5 second to 5 minutes in steps of 0.1 second.<br>**Factory default setting:** 1MIN [>>> 1min] |
| | **NEXT MODE [>> Next mode]:** Select the type of tape protection mode to follow still search mode when the time set with the STILL TIMER menu item elapses. | ***STEP FWD [>>> Step]:** The tape is advanced at $^{1}/_{30}$ times normal speed for about 2 seconds.<br>**STANDBY OFF [>>> STANDBY]:** Standby off mode |

| VIDEO CONTROL [Video]: Settings related to video control | Description of settings |
|---|---|
| (For DSR-1600 only)<br>**SETUP ADD [> Setup add]:** Determine whether or not to add black setup to analog video output signals. | ***OFF [>> OFF]:** Do not add black setup.<br>**ON (ADD) [>> ON]:** Add black setup. |
| (For DSR-1600 only)<br>**CC(F1) BLANK [>CC1 blank]:** Select whether to mute the closed caption signal to be superimposed on the 1st field of the output video signal. | ***OFF [>> OFF]:** Do not mute.<br>**ON [>> ON]:** Mute. |
| (For DSR-1600 only)<br>**CC(F2) BLANK [>CC2 blank]:** Select whether to mute the closed caption signal to be superimposed on the 2nd field of the output video signal. | ***OFF [>> OFF]:** Do not mute.<br>**ON [>> ON]:** Mute. |
| **WIDE MODE [>Wide mode]:** Determine whether to retain wide-screen aspect ratio information accompanying video being played back. | ***AUTO [>> Auto]:** When video being played back is accompanied by wide-screen aspect ratio information, retain the information.<br>**OFF [>> OFF]:** Ignore wide-screen aspect ratio information.<br>**ON [>> ON]:** Whenever recording or playing back video, retain wide-screen aspect ratio information. |
| **ESR MODE [>ESR mode]:** Select whether to enable the edge subcarrier reducer (ESR). | ***OFF [>> OFF]:** Do not enable.<br>**ON [>> ON]:** Enable.<br>When playing back a composite signal, set this to ON. |









| VIDEO CONTROL [Video]: Settings related to video control | | Description of settings |
|---|---|---|
| **PROCESS CONTROL [>Proc ctrl]** | **CONTROL DEV [>>Ctrl dev]:** Select the method of controlling the internal digital video processor. | ***REMOTE [>>>REMOTE]:** Use the optional UVR-60/60P or BVR-50/50P Remote Control Unit to remote control the internal digital video processor.<br>**MENU [>>> MENU]:** Use the setup menu to change the settings for the internal digital video processor. |
| | **C PHASE MODE [>>C Phas MD]:** Select the phase rotation mode for chroma phase control.<br>The effect of this setting applies to the output levels of all of the composite video, S video, SDI and component video signals. | ***U/V (COMPOSITE) [>>> Cmpst]:** Select this setting when observing the composite video output level using a composite vectorscope.<br>**PB/PR (COMPONENT) [>>> Cmpnt]:** Select this setting when observing the component video output level using a component vectorscope. |
| | **ADJ RANGE [>>Adj range]:** Select the variable range of the VIDEO and CHROMA gains. | ***–3 to +3 (dB) [>>> –3/+3]:** –3 dB to +3 dB<br>**WIDE [>>> wide]:** –∞ to +3 dB |
| | **VIDEO GAIN [>>V gain]:** Adjust the video output level. | 00H to 3FFH<br>**Factory default setting:** 200H |
| | **CHROMA GAIN [>>C gain]:** Adjust the chroma output level. | 00H to 3FFH<br>**Factory default setting:** 200H |
| | **CHROMA PHASE [>>C phase]:** Adjust the chroma phase. | 00H to FFH<br>**Factory default setting:** 80H |
| | (For DSR-1600 only)<br>**SETUP LEVEL [>>Setup lev]:** Adjust the black setup level. | 00H to 3FFH<br>**Factory default setting:** 200H |
| | (For DSR-1600P only)<br>**BLACK LEVEL [>>Black lev]:** Adjust the black level. | 00H to 3FFH<br>**Factory default setting:** 200H |

| AUDIO CONTROL [Audio]: Settings related to audio control | | Description of settings |
|---|---|---|
| **LEVEL SELECT [>Level Sel]** | **REF LEVEL [>>REF Level]:** Select the audio reference level (headroom). | ***–20 dB [>>> –20dB]** (factory default setting for DSR-1600)<br>***–18 dB [>>> –18dB]** (factory default setting for DSR-1600P)<br>**–16 dB [>>> –16dB]**<br>**–12 dB [>>> –12dB]** |
| | **OUTPUT LEVEL [>>Out Level]:** Select the analog audio output reference level. | ***+4 dBm [>>> +4dBm]**<br>**0 dBm [>>> 0dBm]**<br>**–3 dBm [>>> –3dBm]** (for DSR-1600P only)<br>**–6 dBm [>>> –6dBm]** |
| **OUTPUT CH3/4 [>OUT ch3/4]:** Select the signals to be output from the AUDIO OUT CH-3 and AUDIO OUT CH-4 connectors. | | ***LINE OUT [>> line out]:** Output the audio channel-3 and audio channel-4 signals from the AUDIO OUT CH-3 and AUDIO OUT CH-4 connectors as they are.<br>**MONITOR OUT [>> monitor]:** Output the monitor audio L-channel (CH-1) and monitor audio R-channel (CH-2) signals from the AUDIO OUT CH-3 and AUDIO OUT CH-4 connectors, respectively. |
| **JOG CONTROL [> Jog ctrl]:** Select whether to adjust the audio playback speed during slow playback. | | **OFF [>> OFF]:** Do not adjust the audio playback speed.<br>***ON [>> ON]:** Adjust the audio playback speed. |

| AUDIO CONTROL [Audio]: Settings related to audio control | Description of settings |
|---|---|
| **SHUTTLE MUTE [>Shutl mute]:** Set the audio muting conditions during shuttle playback. | ***OFF [>> OFF]:** Not muted.<br>**CUEUP or PREROLL [>> CUEUP]:** Muted during cue-up or preroll operations.<br>**FULL [>> FULL]:** Muted in shuttle mode. |
| **DV PB ATT [>DV PB ATT]:** When playing back a tape recorded in consumer DV format, select whether to attenuate the audio output level. | **OFF [>> OFF]:** Do not attenuate.<br>***ON [>> ON]:** Attenuate. |

| SETUP BANK OPERATION [Setup Bank]: Settings related to menu bank operations | Description of settings |
|---|---|
| **RECALL BANK1 [>Recall 1]:** Recall menu settings from menu bank 1. | (1) Select the bank you want to recall, then press the ⇨ button.<br>Message “RECALL OK?” appears.<br>(2) To recall, press the SET (YES) button.<br>To quit recalling, press the RESET (NO) button. |
| **RECALL BANK2 [>Recall 2]:** Recall menu settings from menu bank 2. | |
| **RECALL BANK3 [>Recall 3]:** Recall menu settings from menu bank 3. | |
| **RECALL BANK4 [>Recall 4]:** Recall menu settings from menu bank 4. | |
| **SAVE BANK 1 [>Save 1]:** Save current menu settings to menu bank 1. | (1) Select the bank you want to save, then press the ⇨ button.<br>Message “SAVE OK?” appears.<br>(2) To save, press the SET (YES) button.<br>To quit saving, press the RESET (NO) button. |
| **SAVE BANK 2 [>Save 2]:** Save current menu settings to menu bank 2. | |
| **SAVE BANK 3 [>Save 3]:** Save current menu settings to menu bank 3. | |
| **SAVE BANK 4 [>Save 4]:** Save current menu settings to menu bank 4. | |
| **Menu banks**<br>This unit allows four different complete sets of menu settings to be saved in what are termed “menu banks” numbered 1 to 4. Saved sets of menu settings can be recalled for use as required. | |

| MENU GRADE [Menu grade]: Selection of menu items to be displayed | Description of settings |
|---|---|
| Determine whether to display basic items only or both basic and enhanced items on the monitor screen and in the time counter display when using the menu. | ***BASIC [> Basic]:** Display basic items only.<br>**ENHANCED [> Enhanced]:** Display both basic and enhanced items. |





# Changing Menu Settings

This section explains how to change menu settings.

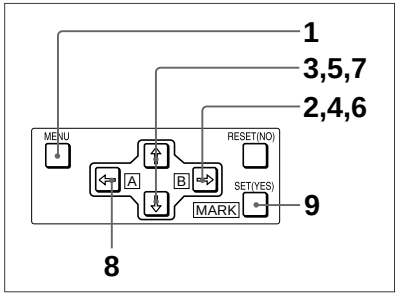
## Buttons Used to Change Settings

Use the following buttons on the menu control panel to change the menu settings.

| Menu control buttons | Functions |
|---|---|
| MENU button | • Opens the menu and launches menu control mode.<br>• Closes the menu and exits menu control mode. |
| ⇧ and ⇩ buttons | These buttons move the highlighted cursor up and down within the current level to select an item or setting. Hold down one of these buttons to make the highlighted cursor move continuously. |
| ⇦ and ⇨ buttons | • Press the ⇨ button to go down one level.<br>• Press the ⇦ button to go up one level.<br>Hold down one of these buttons to make the highlighted cursor move continuously. |
| RESET (NO) button | • Returns the setting to the factory default setting.<br>• Sends a negative response to prompts on the monitor screen. |
| SET (YES) button | • Saves the new setting in memory.<br>• Sends a positive response to prompts on the monitor screen. |

## Changing the Settings of Basic Items

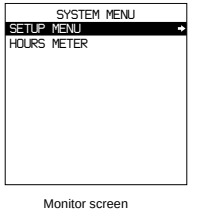
The factory default setting is to display only the basic items. To change the settings of basic items proceed as follows.



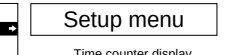

**1** Press the MENU button on the menu control panel.

The menu selection level display appears on the monitor. In the figure below, “SETUP MENU” is selected (shown in reverse video).
The time counter display of this unit shows only the currently selected item. When the item name is long, it is abbreviated.

**Menu selection level display**




Monitor screen

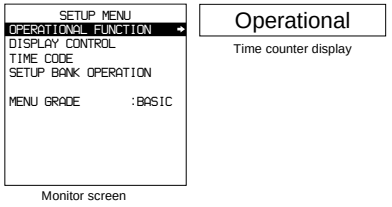



Time counter display

**2** With “SETUP MENU” selected, press the ⇨ button.

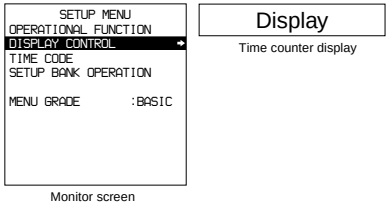
This displays all items on menu level 1.

**Level-1 menu display**




**3** Press the ⇧ or ⇩ button to select the required item.

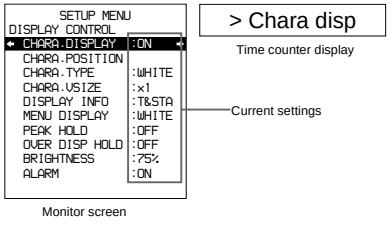
**Example: Display when “DISPLAY CONTROL” is selected**




**4** Press the ⇨ button.

This displays the menu level 2 for the menu item selected in step **3**.

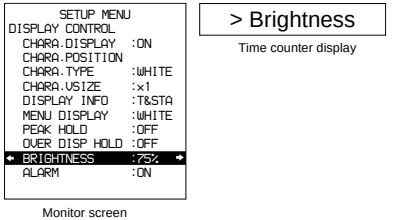
**Example: Level-2 display for “DISPLAY CONTROL”**




**5** Press the ⇧ or ⇩ button to select the item whose setting you wish to change.

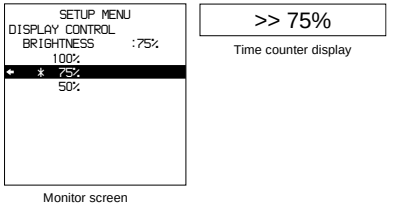
For menu items on level 3, press the ⇨ button to go to the level 3, then press the ⇧ or ⇩ button to select the item whose setting you wish to change.

**Example: Display when “BRIGHTNESS” is selected**

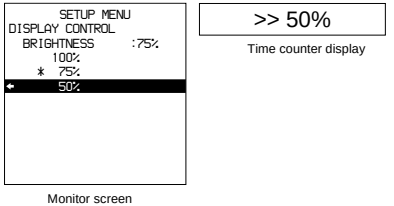



**6** Press the ⇨ button.

This displays all possible settings for the item selected in step **5**.




**7** Press the ⇧ or ⇩ button to change the setting of the item.




**8** To change other settings, press the ⇦ button to return to the previous screen, then repeat steps **5** to **7** as required.

**9** When you have completed the settings, press the SET (YES) button.

The message “NOW SAVING...” appears on the monitor screen, and “Saving...” appears in the time counter display, while the new settings are saved in memory.
When the saving operation is completed, the monitor screen and time counter display return to their normal indications.

**Notes**

- If you power off the unit before saving operation is completed, settings may be lost. Wait until the saving is completed before powering off the unit.
- If, instead of pressing the SET (YES) button, you press the MENU button, the new settings are not saved. The message “ABORT!” appears on the monitor screen and “Abort!” in the time counter display for about 0.5 second, and the system exits the menus. To change more than one setting, be sure to press the SET (YES) button after making the settings.

### Meanings of indications on the monitor screen

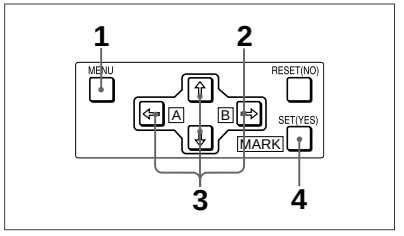
| On-screen indication | Meaning |
|---|---|
| Right-pointing arrow (⇨) at the right of a menu item *See step **1** of the foregoing operating procedure.* | Pressing the ⇨ button switches to the next lower menu level or to a setting selection screen. |
| Left-pointing arrow (⇦) at the left of a menu item *See step **4** of the foregoing operating procedure.* | Pressing the ⇦ button returns to the previous (higher) menu level. |
| Character string at the right of a menu item *See step **4** of the foregoing operating procedure.* | Current setting of the menu item.<br>• When shown with a colon (:): the current setting is the same as the factory default setting.<br>• When shown with a raised dot (•): the current setting is different from the factory default setting.<br>*See step **2** of the operating procedure in “Changing the Settings of Enhanced Items” on page 49.* |
| An asterisk in a complete list of settings *See step **6** of the foregoing operating procedure.* | Factory default setting. |

## Displaying Enhanced Items

The factory default setting is not to display enhanced items.
To display enhanced items, set the MENU GRADE menu item *(see page 46)* to ENHANCED, following the procedure in the previous section “Changing the Settings of Basic Items.” (In step **3**, first select “MENU GRADE,” and next select “ENHANCED,” then press the SET (YES) button to save the setting in memory.)
With this done, when you press the MENU button and the ⇨ button to display the setup menu, all basic and enhanced items in the menu level 1 appear.

## Changing the Settings of Enhanced Items

To change the settings of enhanced items, first carry out the procedure in the previous section “Displaying Enhanced Items,” then proceed as follows.



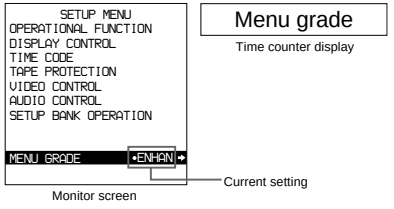

**1** Press the MENU button on the menu control panel.

The menu selection level display appears on the monitor.

**2** With “SETUP MENU” selected, press the ⇨ button.

This displays all basic and enhanced items on menu level 1.

**Level-1 menu display**



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**3** Follow the same procedure as in steps **3** to **8** of the procedure in the section *"Changing the Settings of Basic Items" on page 47* using the arrow buttons to select an item and change its setting.

**4** When you have completed the settings, press the SET (YES) button.

The message "NOW SAVING..." appears on the monitor screen, and "Saving..." appears in the time counter display, while the new settings are saved in memory.
When the saving operation is completed, the monitor screen and time counter display return to their normal indications.

## Returning Menu Settings to Their Factory Default Settings

After making menu setting changes, to return settings to their factory default settings (setting initialization), use the following procedure.

### To return a particular setting to its factory default setting

In the display for changing the target setting, press the RESET (NO) button.
Carry out the procedure in the section *"Changing the Settings of Basic Items" on page 47* up to step **6**, then with the current setting displayed (in the example, if the setting has been changed it will be "100%" or "50%"), press the RESET (NO) button. The setting returns to its factory default setting of "75%."

### To return all settings to their factory default settings

Use the following procedure.

**1** Press the MENU button on the menu control panel to display the menu selection.

**2** Press the ⇨ button to display level 1 of the setup menu.

**3** Press the RESET (NO) button.

A message appears, to confirm whether or not you wish to return all settings to their factory default settings.

| | |
|---|---|
| **Monitor screen message** | "INITIALIZE ALL ITEMS TO FACTORY PRESET VALUES?" |
| **Message in the time counter display** | "Init setup?" |

**4** Press the SET (YES) button.

The message "NOW SAVING..." appears on the monitor screen, and "Saving..." appears in the time counter display, while the settings of all items are returned to their factory default settings. These factory default settings are saved in memory.

**Note**

If you power off the unit while settings are being saved, settings may not be correctly returned to their factory default settings. Wait until the saving is completed before powering off the unit.

**To abandon the resetting operation**

Instead of pressing the SET (YES) button, press the RESET (NO) button. The display returns to menu level 1, leaving the settings unchanged.





# Chapter 5 Connections and Settings

## Connections for a Digital Non-Linear Editing System

This unit can be connected to an ES-7 EditStation to configure a digital non-linear editing system.
If you use the SDTI (QSDI) interface with the optional DSBK-1602 board installed in the unit, you can transfer video, audio, time code, and other compressed data from this unit to the ES-7.
The unit supports ClipLink functions, enabling index pictures recorded on tape and ClipLink log data stored in cassette memory to be transferred to the ES-7 in an instant.

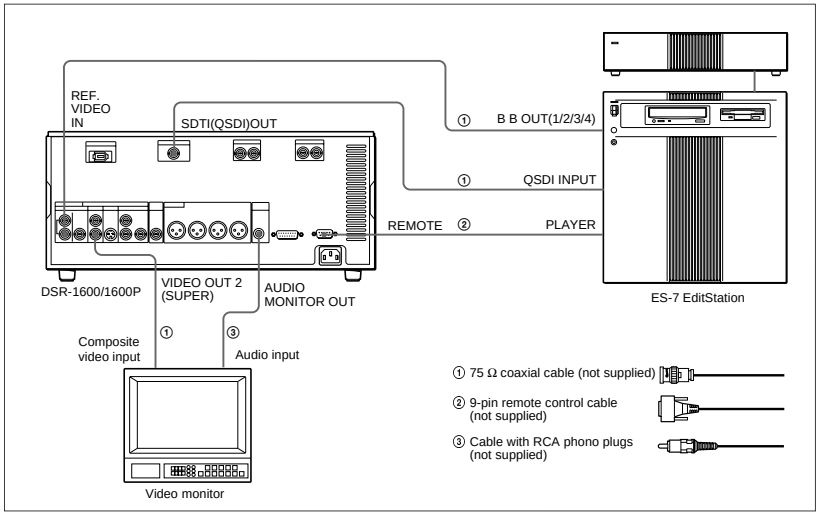
*For a general description of ClipLink functions, see the appendix "ClipLink Guide" (page 73).*

The following figure shows a connection diagram for a non-linear editing system in which this unit serves as the player.

*For connections of the ES-7 and its peripheral devices such as the ESBK-7011 Control Panel, the ESBK-7045 Disk Unit, etc., refer to your ES-7 Operating Instructions.*

**Note**

The example connections shown in this chapter assume that the optional DSBK-1601/1602/1803 and DSBK-1801/1802/1803 boards are installed as required on the DSR-1600/1600P and DSR-1800/1800P, respectively.



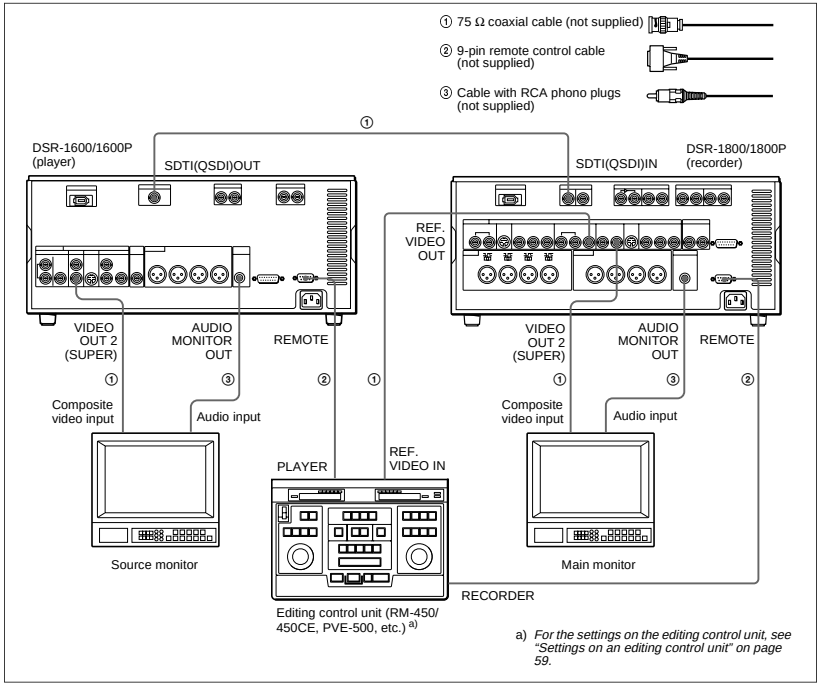

**Settings on the DSR-1600/1600P**

| Button | Setting |
|---|---|
| REMOTE | On (lit) |

# Connections for a Cut Editing System

The following figure shows a cut editing system configuration which includes a DSR-1600/1600P unit as the player and a DSR-1800/1800P as the recorder.

*For details of connecting devices other than the DSR-1600/1600P, refer to the instruction manual for each device.*




a) *For the settings on the editing control unit, see "Settings on an editing control unit" on page 59.*

**Settings on the DSR-1600/1600P (player) and DSR-1800/1800P (recorder)**

| Button | Recorder | Player |
|---|---|---|
| REMOTE | On (lit) | On (lit) |
| 9PIN | On (lit) | On (lit) |

*For details of the video/audio input and audio mode settings for the recorder, refer to the DSR-1800/1800P Operating Instructions.*

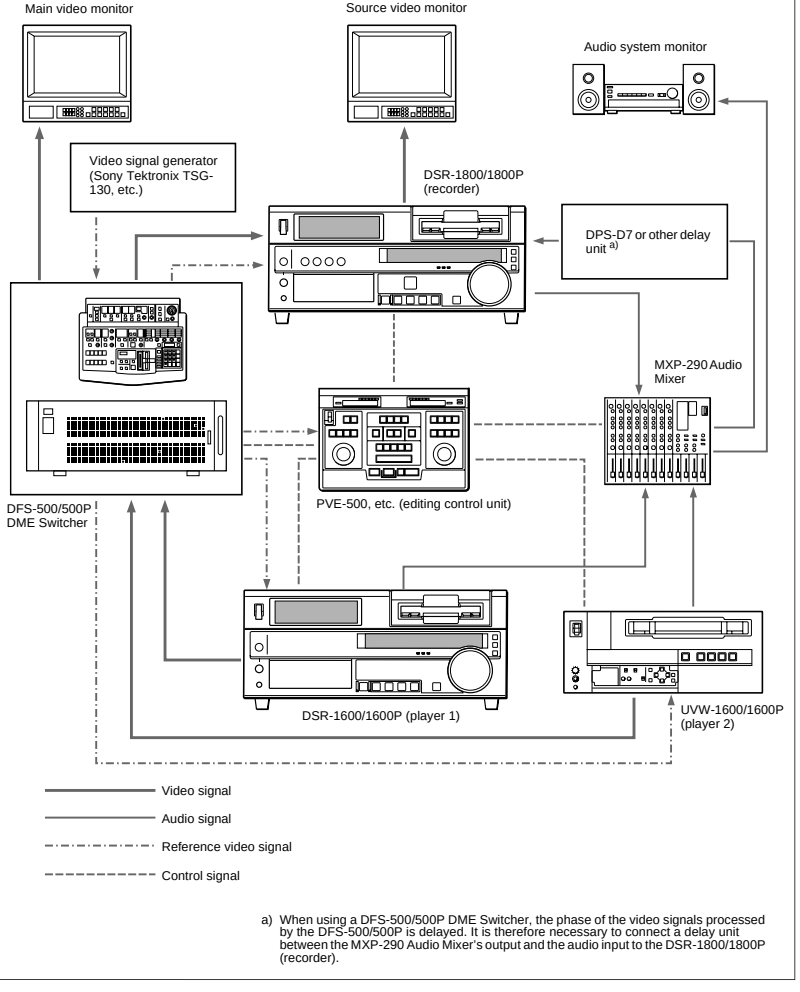
## About reference video signals

In order to provide stable video and audio signals for analog editing, it is necessary for the built-in time base corrector (TBC) to operate correctly. To ensure this, input a reference video signal synchronized with the video signal to the REF. VIDEO IN connector.

# Connections for an A/B Roll Editing System

The following is an example configuration of A/B roll editing system using the DSR-1600/1600P.
In this configuration, the recorder is a DSR-1800/1800P unit, player 1 is a DSR-1600/1600P unit, and player 2 is an analog Betacam UVW-1600/1600P Videocassette Player unit. To create a final tape (a tape that contains a completely packaged program) in Betacam format, use a Betacam VCR such as the UVW-1800/1800P as the recorder.

The purpose of the following figure is to clearly indicate the flow of signals among the component devices in this system. The specific connections and settings are described beginning on *page 56*.




a) When using a DFS-500/500P DME Switcher, the phase of the video signals processed by the DFS-500/500P is delayed. It is therefore necessary to connect a delay unit between the MXP-290 Audio Mixer's output and the audio input to the DSR-1800/1800P (recorder).





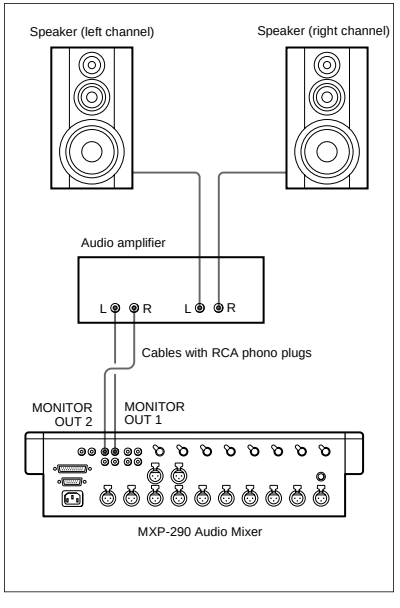


Chapter 5 Connections and Settings

## Audio monitor system connections

The following shows an example of audio monitor system connections.

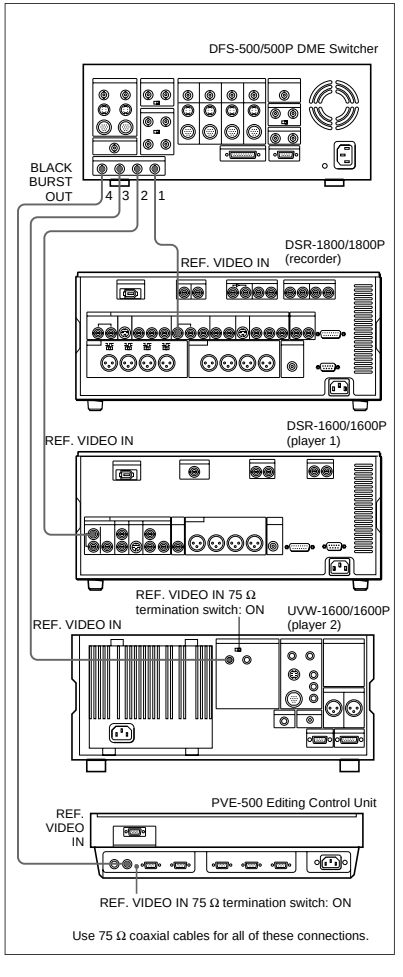
*For details of these connections, refer to the instruction manual for each connected device.*




## Reference video signal connection

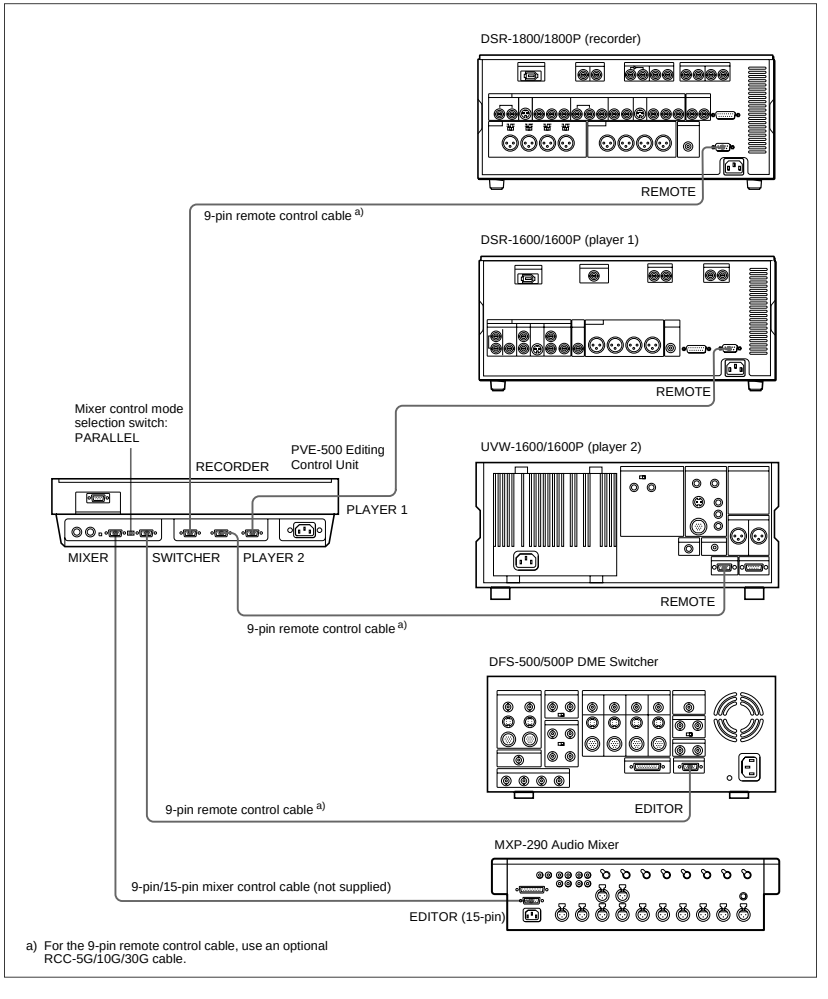
When you perform recording, be sure to input a reference video signal.

*For details of reference video signals, see "About reference video signals" on page 53.*


DFS-500/500P DME Switcher
BLACK BURST OUT
4 3 2 1
REF. VIDEO IN
DSR-1800/1800P (recorder)
REF. VIDEO IN
DSR-1600/1600P (player 1)
REF. VIDEO IN 75 Ω termination switch: ON
REF. VIDEO IN
UVW-1600/1600P (player 2)
PVE-500 Editing Control Unit
REF. VIDEO IN
REF. VIDEO IN 75 Ω termination switch: ON
Use 75 Ω coaxial cables for all of these connections.

## Control signal connections

The following shows an example of control signal connections to enable the editing control unit to control all other A/B roll editing system devices.

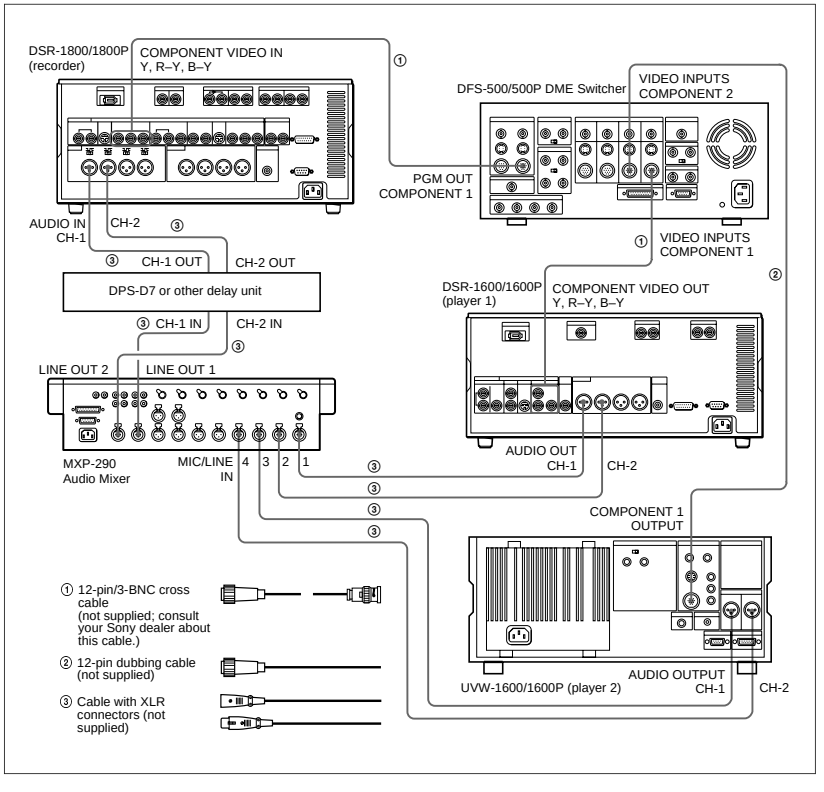



a) For the 9-pin remote control cable, use an optional RCC-5G/10G/30G cable.

## Video/audio signal connections

The following shows an example of video/audio signal connections in an A/B roll editing system.

In this example, analog component signals are used as the video signals and XLR 3-pin connectors are used as audio input/output connectors.



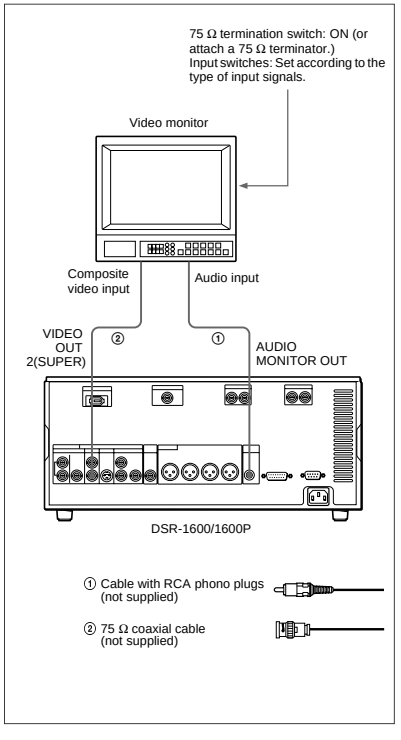

**Settings on the DSR-1800/1800P**

| Switch/menu | Setting |
|---|---|
| AUDIO IN LEVEL/600 Ω switches | HIGH-ON |
| LEVEL SELECT menu item | Normally +4 dBm *(see page 45)* |

*For details of the video/audio input and audio mode settings, refer to the instruction manuals for the devices used.*

## Connection of a video monitor

Set up the following connections to enable monitoring of video and audio signals on a video monitor. In addition to the video and audio signals, you can have time data, the operation mode of the unit, alarm messages, and other information displayed as text on the monitor screen by setting the CHARA. DISPLAY menu item *(see page 42)* to ON (factory default setting).


75 Ω termination switch: ON (or attach a 75 Ω terminator.)
Input switches: Set according to the type of input signals.
Video monitor
Composite video input
Audio input
VIDEO OUT 2(SUPER)
AUDIO MONITOR OUT
DSR-1600/1600P
① Cable with RCA phono plugs (not supplied)
② 75 Ω coaxial cable (not supplied)

## Settings on an editing control unit

When connecting an editing control unit, make the settings as follows, according to the model.

### PVE-500

No settings are required.

### BVE-600/900/910/2000 (NTSC model) or FXE-100/120

Set the VCR constants as follows.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | 16 | 00 | 96 | 05 | 05 | 03 | 80 | 0A | 08 | FE | 00 | 80 | 5A | FF |

### BVE-600/900/910/2000 (PAL model) or FXE-100P/120P

Set the VCR constants as follows.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 81 | 16 | 00 | 7D | 05 | 05 | 02 | 80 | 0A | 07 | FE | 00 | 80 | 4C | FF |

### RM-450/RM-450CE

Set the DIP switches as follows.

• **Left switches**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| OFF | – | – | OFF | – | – | – | – |

• **Right switches (RM-450)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| OFF | – | OFF | ON | OFF | OFF | ON | ON |

• **Right switches (RM-450CE)**

| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|
| ON | – | OFF | ON | OFF | OFF | ON | ON |

### BVE-800

Set the DIP switches as follows.

• **SW2**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| ON | OFF | ON | ON | – | ON | ON | – |

• **SW3 (NTSC model)**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| ON | ON | ON | OFF | – | ON | OFF | OFF |

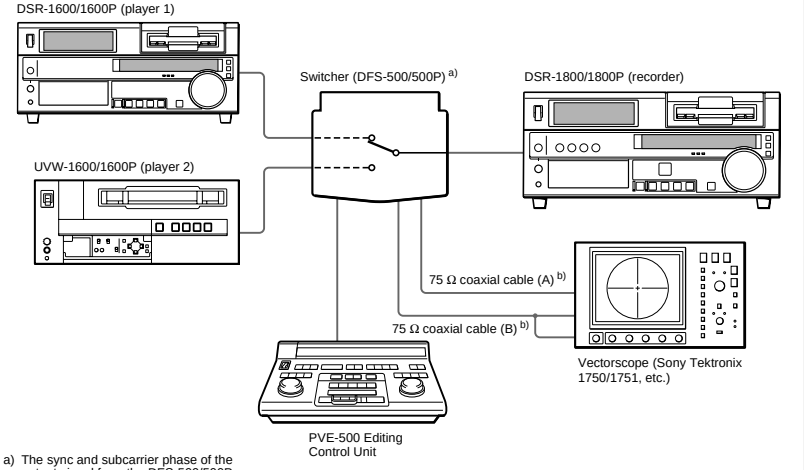
• **SW3 (PAL model)**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| OFF | OFF | OFF | ON | – | ON | OFF | OFF |

# Adjusting the Sync and Subcarrier Phases

When using two or more players, as in an A/B roll editing system, it is necessary to synchronize the sync and subcarrier (for composite signals) phases of the signals to be edited. If they are not synchronized, picture instabilities or color break-up may occur at edit points.

After configuring the editing system, use a vectorscope to adjust the sync and subcarrier phase of the recorder and players. Subcarrier phase adjustment is necessary when using composite signals and Y/C signals.


DSR-1600/1600P (player 1)
Switcher (DFS-500/500P) a)
DSR-1800/1800P (recorder)
UVW-1600/1600P (player 2)
75 Ω coaxial cable (A) b)
75 Ω coaxial cable (B) b)
Vectorscope (Sony Tektronix 1750/1751, etc.)
PVE-500 Editing Control Unit

a) The sync and subcarrier phase of the output signal from the DFS-500/500P switcher are automatically adjusted.

b) Ensure that the 75 Ω coaxial cables (A) and (B) (not supplied) are of the same length.

## Performing a phase adjustment operation

**1** Press the SCH button on the vectorscope.

The vectorscope switches to SCH mode.

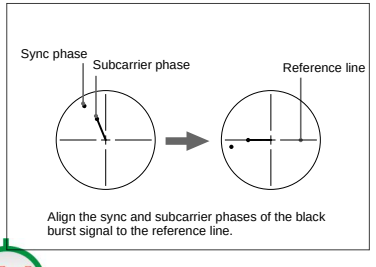
**2** Press the B channel button on the vectorscope.

This displays the black burst signal from the switcher.

**3** Press the EXT button on the vectorscope.

This switches the vectorscope to external synchronization mode.

**4** Adjust the phase synchronization control on the vectorscope so that the sync and subcarrier phases are close to the reference line.



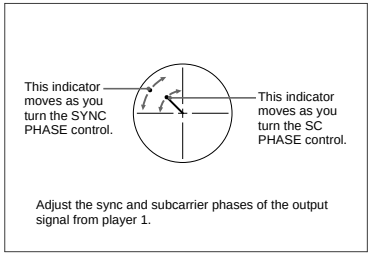

Align the sync and subcarrier phases of the black burst signal to the reference line.

**5** Output the player 1 signal from the PVE-500.

**6** Press the A channel button on the vectorscope.

This displays the sync and subcarrier phases (composite signals only) of the signal from player 1.

**7** On player 1, adjust the SYNC PHASE and SC PHASE controls on the menu control panel, using a Phillips screwdriver, so that the output from player 1 on channel A is in correct phase alignment with the black burst signal on channel B.




Adjust the sync and subcarrier phases of the output signal from player 1.

**Note**

When component signals are used the subcarrier phase indicator does not appear.

**8** Output the player 2 signal from the PVE-500, and repeat steps **6** and **7** to adjust the sync and subcarrier phases of the output from player 2.

# Maintenance and Troubleshooting

Chapter 6

## Maintenance

### Condensation

If you move the unit suddenly from a cold to a warm location, or if you use it in a very humid place, moisture from the air may condense on the head drum. This is called condensation, and if a tape is run in this state, the tape may stick to the drum and can be easily damaged. To lessen the risk of this occurring, this unit is equipped with a condensation detection system.

**If condensation occurs while the unit is operating:**
The alarm message "MOISTURE HAS BEEN DETECTED." appears on the monitor screen, and the alarm message "HUMID!" in the time counter display. At the same time the unit ejects the cassette automatically. If this happens, leave the unit powered on and wait until the alarm messages disappear.

**If the condensation alarm message appears immediately after powering on:**
Leave the unit powered on and wait until the alarm message disappears. You cannot load a cassette into the unit while the alarm message is being displayed.
Once the alarm message disappears, the unit is ready for use.

### Regular Checks

#### Digital hours meter

The digital hours meter keeps cumulative counts of the total operating time, the head drum rotation time, the tape transport operating time, and the number of threading/unthreading operations. These counts can be displayed on the monitor screen and in the time counter display of this unit. Use them as guidelines for scheduling maintenance. In general, consult your Sony dealer about necessary periodic maintenance checks.

**Digital hours meter display modes**
The digital hours meter has the following four display modes.

- **T1 (OPERATION) mode**
  The cumulative total hours during which the unit is powered on is displayed in 10-hour increments.
- **T2 (DRUM ROTATION) mode**
  The cumulative total hours of drum rotation with tape threaded is displayed in 10-hour increments.
- **T3 (TAPE RUNNING) mode**
  The cumulative total hours of tape transport operation for fast forward, rewind, playback, and search (except in still search mode) is displayed in 10-hour increments.
- **CT (THREADING) mode**
  The cumulative number of tape threading/unthreading operation pairs is displayed in 10-operation pair increments.

For all modes except T1 (OPERATION), there are two types of count: a "trip" count, which is resettable, and the cumulative total from manufacture, which is unresettable.

### Displaying the digital hours meter

Use the following procedure.

**1** Press the MENU button on the menu control panel.

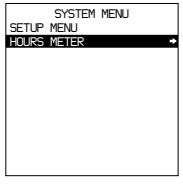
The menu selection level display appears on the monitor screen and in the time counter display.

**Menu selection level display**

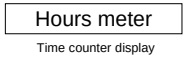
Monitor screen

Time counter display

**2** Press the ⇩ button to select “HOURS METER.”




Monitor screen



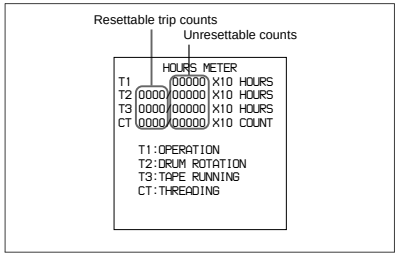

Time counter display

**3** Press the ⇨ button.

The cumulative counts by the digital hours meter are indicated on the monitor screen and in the time counter display.

#### Digital hours meter indications on the monitor screen

All four counts (T1, T2, T3, and CT) are indicated on the monitor screen.

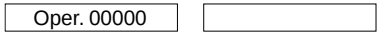



The four-digit value to the left of the slash (/) is the resettable trip count, and the right value is the cumulative total from manufacture.

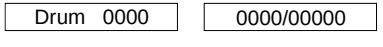
#### Digital hours meter indications in the time counter display

One of the four indications appears in the time counter display at a time. Use the ⇧ and ⇩ buttons on the menu control panel to change the item displayed.
Initially, only the trip value appears. Hold down the ⇨ button to display also the cumulative total from manufacture, which will appear to the right of the trip value and the slash (/).
The following illustrates the digital hours meter indications in the time counter display in all four display modes. The right-hand indication for each display mode is the indication you can view while holding down the ⇨ button on the menu control panel.

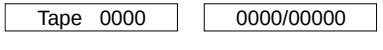
**T1 (OPERATION) mode:**



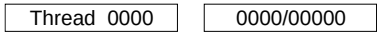

**T2 (DRUM ROTATION) mode:**




**T3 (TAPE RUNNING) mode:**




**CT (THREADING) mode:**




#### To end the digital hours meter display

Press the MENU button on the menu control panel.

#### To reset the trip values

About this operation, consult your Sony dealer.

## Head Cleaning

Always use the DVM12CL (mini size) or DV12CL (standard size) Cleaning Cassette to clean the video and audio heads. You can run the cleaning cassette for 10 seconds per cleaning operation. Follow the instructions for the cleaning cassette, as inappropriate use of the cleaning cassette can damage the heads.

#### To clean the heads

Insert the cleaning cassette. This automatically starts cleaning. You cannot operate any tape transport control buttons other than the EJECT button during the cleaning operation.
After about 10 seconds, the cleaning cassette will be automatically ejected.

# Troubleshooting

If an alarm message appears on the monitor screen, or if the unit appears to be malfunctioning, please check the following before contacting your Sony dealer.

| Tape problem | | |
|---|---|---|
| **Symptom** | **Cause** | **Remedy** |
| The unit's tape transport control buttons (PLAY, F FWD, REW, etc.) do not work. | The REMOTE button is lit and the LOCAL ENABLE menu item is set to STOP & EJECT or ALL DISABLE. a) | Press the REMOTE button to turn it off, or change the setting of the LOCAL ENABLE menu item *(see page 40)* to ALL ENABLE. |
| | No cassette is loaded. a) | Insert a cassette *(see page 21)*. |

a) In these states, an alarm message appears on the monitor screen and in the time counter display.

| Time data problem | | |
|---|---|---|
| **Symptom** | **Cause** | **Remedy** |
| The tape is running, but the time data is not shown in the time counter display. | The U-BIT time data type indicator is lit. | Press the COUNTER SEL button to make the COUNTER or TC time data type indicator light up. |

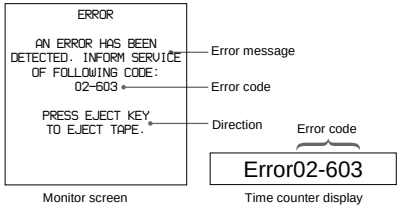
| Monitor problems | | |
|---|---|---|
| **Symptom** | **Cause** | **Remedy** |
| Data is not superimposed on the monitor screen. | The CHARA. DISPLAY menu item is set to OFF. | Set the CHARA. DISPLAY menu item *(see page 42)* to ON. |
| | The monitor is not connected to the VIDEO OUT 2 (SUPER) connector of this unit. | Connect the monitor to the VIDEO OUT 2 (SUPER) connector. (You must make this connection to display any type of text on the monitor.) |
| The image on the monitor screen is too bright. | The 75 Ω termination switch for video input on the monitor is in the OFF position, or a 75 Ω terminator is not fitted to its video input connector. | Set the 75 Ω termination switch to ON or connect a terminator. |
| The image on the monitor screen is too dark. | In a video signal loop-through connection of video monitors, 75 Ω termination switches for video input on monitors other than the loop-end monitor are in the ON position. | Set the 75 Ω termination switches to OFF on all monitors other than the loop-end monitor. |

## Error Messages

This unit is provided with a self-diagnostic function that detects internal abnormalities. When it detects an abnormality, it outputs an error message to the monitor screen and indicates an error code in the time counter display.

**Note**

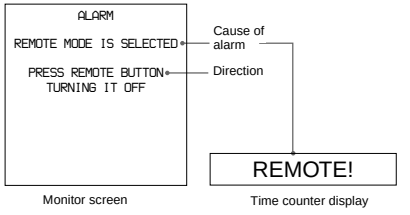
To display error messages on the monitor screen, connect the monitor to the VIDEO OUT 2 (SUPER) connector, and set the CHARA. DISPLAY menu item *(see page 42)* to ON (factory default setting).




If an error message appears, follow the direction indicated on the monitor screen.

## Alarm Messages

When operating this unit, the unit may sometimes output alarm messages such as the one shown below to the monitor screen and the time counter display.




If such an alarm message appears, a connection or operation error may have been made, or condensation on heads may have occurred. Follow the direction indicated on the monitor screen.

**Note**

To display alarm messages on the monitor screen, it is necessary for the monitor to be connected to the VIDEO OUT 2 (SUPER) connector, and set the following menu items to ON.

- CHARA. DISPLAY *(see page 42)*
- ALARM *(see page 43)*
- REF ALARM *(see page 43)*

**Alarm messages and associated directions**

| Alarm message on monitor screen (Cause) | Direction | Alarm message in time counter display |
|---|---|---|
| A cleaning tape has been inserted. | The tape will automatically be ejected after cleaning is completed. | Cleaning Tp |
| Abnormal settings selected in setup menu. | Correct the setup menu settings. Contact your Sony dealer if this alarm message appears again after making corrections. | ILL. SETUP! |
| Cassette adaptor not usable. | Use a tape without cassette adaptor. | Adaptor! |
| Moisture has been detected. | Keep the power on and wait until this alarm message disappears. | HUMID! |
| No cassette in VTR. | Load a cassette. | No Cass.! |
| Remote mode is selected. | Turn off the REMOTE button. | REMOTE! |
| Tape cannot be replayed. | Use a tape recorded in 525/60 format. (For DSR-1600) | 625/50 Tape (For DSR-1600) |
| | Use a tape recorded in 625/50 format. (For DSR-1600P) | 525/60 Tape (For DSR-1600P) |
| Tape end has been detected. | Use a new cleaning tape. | Tape end! |
| Tape not usable. | Use a DVCAM/DV/DVCPRO (25M) tape. | ILL. Tape! |





# Appendixes

## Precautions

### On safety

- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time.
- To disconnect the cord, pull it out by the plug. Never pull the cord itself.

### On operation and storage locations

Avoid operation or storage in any of the following places.

- Location subject to extremes of temperature (operating temperature range 5ºC to 40ºC (41ºF to 104ºF))
- Location subject to direct sunlight for long periods, or close to heating appliances (Note that the interior of a car left in summer with the windows closed can exceed 50ºC (122ºF).)
- Damp or dusty places
- Location subject to severe vibrations
- Location near equipment generating strong electromagnetic emissions
- Location near transmitting stations generating strong radio waves

### Operate the unit in a horizontal position

This unit is designed to be operated in a horizontal position. Do not operate it on its side, or tilted through an excessive angle (exceeding 20º).

### Avoid violent impacts

Dropping the unit, or otherwise imparting a violent shock to it, is likely to cause it to malfunction.

### Do not obstruct ventilation openings

To prevent the unit from overheating, do not obstruct ventilation openings, by for example wrapping the unit in a cloth while it is in operation.

### On cleaning

If the casing or panel is dirty, wipe it gently with a soft dry cloth. In the event of extreme dirt, use a cloth steeped in a neutral detergent to remove the dirt, then wipe with a dry cloth. Applying alcohol, thinners, insecticides, or other volatile solvents may result in deforming the casing or damaging the finish.

### On repacking and shipping

Save the original shipping carton and packing material; they will come in handy if you ever have to ship your unit. For maximum protection, repack your unit as it was originally packed at the factory, and take care not to impart violent shocks in transit.

http://getMANUAL.com



# Specifications

## General

Signal system DSR-1600: NTSC
DSR-1600P: PAL

Power requirements
100 V to 240 V AC, 50/60 Hz

Power consumption (with all options installed)
DSR-1600:
70 W/120 V
DSR-1600P for Europe:
70 W/220 V

Peak inrush current
(1)Power ON, current probe method:
40 A (100 V), 40 A (240 V)
(2)Hot switching inrush current, measured in accordance with European standard EN55103-1:
40A (230 V)

Operating temperature
5ºC to 40ºC (41ºF to 104ºF)

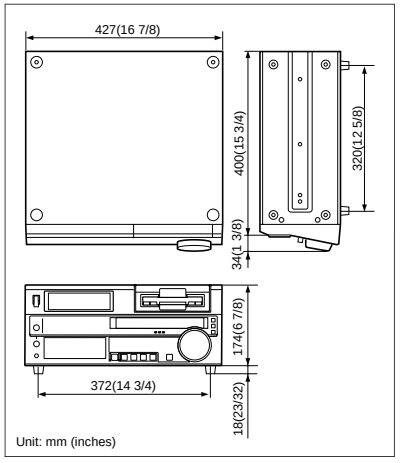
Storage temperature
–20ºC to +60ºC (–4ºF to +140ºF)

Operating relative humidity
Less than 80%

Storage relative humidity
Less than 90%

Mass 13 kg (28 lb 10 oz)

Dimensions (w/h/d, excluding projections)
427 × 174 × 400 mm
($16^{7}/_{8} \times 6^{7}/_{8} \times 15^{3}/_{4}$ inches)



Unit: mm (inches)

## Tape transport control system

Tape speed DSR-1600: 28.193 mm/s
DSR-1600P: 28.221 mm/s

Playback time
Using PDV-184ME standard-size cassette:
Maximum 184 minutes
Using PDVM-40ME mini-size cassette:
Maximum 40 minutes

Fast forward/rewind time
Using PDV-184ME standard-size cassette:
Less than 3 minutes
Using PDVM-40ME mini-size cassette:
Less than 1 minute

Search speed When controlling via RS-422A interface:
Maximum 60 times normal speed in both directions
When controlling from DSRM-10 Remote Control Unit:
Jog mode: 0 (still) to 2 times normal speed in both directions
Shuttle mode: 8 speeds from 0 (still) to 16 times normal speed in both directions

## Video performance

Band width Composite (DSR-1600):
30 Hz to 4.2 MHz ±1.0 dB (Y)
Composite (DSR-1600P):
25 Hz to 4.8 MHz ±1.0 dB (Y)
S-video (DSR-1600):
30 Hz to 5.0 MHz ±1.0 dB (Y),
5.75 MHz +0/–3.0 dB (Y) (TM)
S-video (DSR-1600P):
25 Hz to 5.0 MHz ±1.0 dB (Y),
5.5 MHz +1.0/–2.0 dB (Y),
5.75 MHz +0/–3.0 dB (Y) (TM)
Component (DSR-1600):
30 Hz to 5.0 MHz ±1.0 dB (Y),
5.75 MHz +0/–3.0 dB (Y) (TM),
30 Hz to 1.3 MHz ±1.0 dB (C),
1.5 MHz +0/–5.0 dB (C)
Component (DSR-1600P):
25 Hz to 5.0 MHz ±1.0 dB (Y),
5.5 MHz +1.0/–2.0 dB (Y),
5.75 MHz +1.0/–3.0 dB (Y) (TM),
25 Hz to 1.5 MHz ±1.0 dB (C),
2.0 MHz +1.0/–2.0 dB (C)

S/N Composite output (Y):
53 dB or more
S-video output (Y): 55 dB or more
Component output (Y): 55 dB or more

Y/C delay 30 ns or less

K-factor 2.0% or less (K2T, KPB)

## Processor adjustment range

Video level ±3 dB/–∞ to 3 dB selectable
Chrome level ±3 dB/–∞ to 3 dB selectable
Setup/Black level
±30 IRE (±210 mV)
Chroma phase ±30°
Y/C delay ±100 ns
System phase Sync: ±1 µs*
SC: ±180°

* +2 µs to -3 µs when using a TBC remote control unit

## Audio performance

Frequency response
Two-channel (48 kHz) mode:
20 Hz to 20 kHz +0.5 dB/–1.0 dB
Four-channel (32 kHz) mode:
20 Hz to 14.5 kHz +0.5 dB/–1.0 dB

Dynamic range More than 90 dB

Distortion (THD + N)
Less than 0.05% (48 kHz)

## Input connectors

### Analog video inputs

REF. VIDEO IN
BNC type (×2, loop-through)
Black burst
0.286 V (DSR-1600) or 0.3 V (DSR-1600P), 75 Ω, negative sync
Composite sync

## Output connectors

### Digital signal outputs

SDTI (QSDI) OUT (with optional DSBK-1602 SDTI (QSDI) Output Board installed)
BNC type, SDTI (QSDI) format (270 Mbps)

SDI OUT (with optional DSBK-1601 SDI/AES/EBU Output Board installed)
BNC type (×2, active-through), Serial Digital Interface format (270 Mbps), SMPTE 259M/CCIR656-III

i.DV IN/OUT (with optional DSBK-1803 i.LINK/DV Input/Output Board installed)
6-pin IEEE 1394 connector

### Analog video outputs

REF. VIDEO OUT
BNC type ×1
Black burst
0.286 V (DSR-1600) or 0.3 V (DSR-1600P), 75 Ω, negative sync
Composite sync

VIDEO OUT 1, 2 (SUPER)
BNC type (×2), composite, 1.0 Vp-p, 75 Ω, sync negative

COMPONENT VIDEO OUT
BNC type (×3), Y/R–Y/B–Y
Y: 1.0 Vp-p, 75 Ω, sync negative
R–Y: 0.7 Vp-p, 75 Ω (75% color bars for DSR-1600 or 100% color bars for DSR-1600P)
B–Y: 0.7 Vp-p 75 Ω (75% color bars for DSR-1600 or 100% color bars for DSR-1600P)

S VIDEO OUT DIN 4-pin
Y: 1.0 Vp-p, 75 Ω, sync negative
C: 0.286 Vp-p (DSR-1600) or 0.3 Vp-p (DSR-1600P), 75 Ω (burst level)

**Analog audio outputs**

AUDIO OUT XLR 3-pin, male (× 4), +4/0/–3*/–6 dBm, 600 Ω loading, low impedance, balanced

AUDIO MONITOR OUT
Phono jack, –11 dBu ±1 dBu, 47 kΩ, unbalanced

* Selectable on DSR-1600P only

**Digital audio outputs**

DIGITAL AUDIO (AES/EBU) OUT (with optional DSBK-1601 SDI/AES/EBU Output Board installed)
BNC type (×2), complying with AES-3id-1995

**Output for headphones**

HEADPHONES
Stereo phone jack, –∞ to –13 dBu, 8 Ω, unbalanced

**Time code output**

TIME CODE OUT
BNC type, SMPTE time code (DSR-1600), EBU time code (DSR-1600P), 2.2 Vp-p ±3 dB, 600 Ω, unbalanced

## Remote control connectors

REMOTE D-sub 9-pin, for connection of editing control unit*, RS-422A standard

CONTROL S Stereo minijack, for connection of SIRCS-compatible remote control unit (DSRM-10)

VIDEO CONTROL
D-sub 15-pin, for connection of TBC remote control unit**

i.DV IN/OUT (with optional DSBK-1803 i.LINK/DV Input/Output Board installed)
6-pin IEEE 1394 connector

* ES-7, PVE-500, RM-450/450CE, BVE-600/800/910/2000/9100/9100P, etc.
** UVR-60/60P, etc.

## Supplied accessories

AC power cord (1)
Operating Instructions (1)

## Optional accessories

DSBK-1601 SDI/AES/EBU Output Board
DSBK-1602 SDTI (QSDI) Output Board
DSBK-1803 i.LINK/DV Input/Output Board
RCC-5G/10G/30G 9-pin remote control cable (length: 5 m (16 ft)/10 m (33 ft)/30 m (98 ft))
RMM-130 Rack Mount Kit
Digital video cassette
Standard size: PDVM-64ME/94ME/124ME/184ME
Mini size: PDVM-12ME/22ME/32ME/40ME
Cleaning cassette
DV12CL (standard size), DVM12CL (mini size)

## Related equipment

ES-3/7 EditStation
Linear editing control unit: PVE-500, RM-450/450CE, BVE-600/800/910/2000/9100/9100P
DME switcher: DFS-300/300P, DFS-500/500P, DFS-700/700P
DXC-D30/D30P Color Video Camera
DSR-1/1P/300A Digital Videocassette Recorder
DSR-85/85P/2000/2000P Digital Videocassette Recorder
DSR-1800/1800P Digital Videocassette Recorder
DSR-300/300P/500WS/500WSP/130/130P/150/150P Digital Camcorder
DSRM-10 Remote Control Unit
TBC remote control unit: UVR-60/60P, BVR-50/50P

Design and specifications are subject to change without notice.









# ClipLink Guide

## What Is ClipLink?

The ClipLink function greatly improves the efficiency of the video production process as a whole by recording various editing-related data on tape when shooting. As such, ClipLink is a revolutionary function that transcends the conventional separation of shooting and editing.

## How ClipLink Changes Video Production Techniques

The following describes various ways in which ClipLink* video production differs from conventional video production.

* The ClipLink system is a video production system which uses the cassette memory function.

**Recording of ClipLink log data lightens the shooting workload**

When you start shooting a scene, ClipLink log data such as the scene number and time code data are automatically recorded into the cassette memory. This eliminates the need for a conventional “shot list” compiled by someone using a stopwatch, clipboard and pencil. You can also designate unwanted scenes as “NG” (no good) and automatically skip all “NG” scenes when editing.

**Recorded index pictures drastically cut editing time**

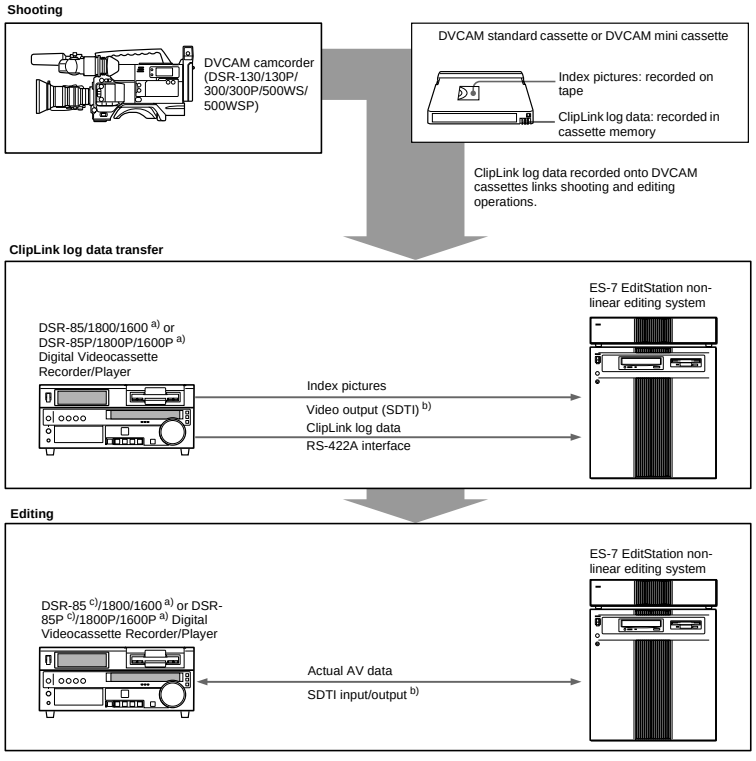
The ClipLink function also features index pictures as a time-saving tool for rough editing. Each index picture is a compressed image taken from the start of each scene, which is recorded onto the tape as a still picture. When editing, begin by transferring only the index pictures and the ClipLink log data to the EditStation’s hard disk. You can also transfer OK scenes only (“NG” scenes are skipped).
Next, begin rough editing by viewing the index pictures on the EditStation’s GUI display and rearranging them as you wish. This eliminates the difficult work of matching up a handwritten shot list with recorded scenes. After you have completed this rough editing, you can then transfer only the recordings needed for your video program.

**High-speed transfer of recordings**

It is also possible to transfer the editing material itself between the DSR-85/85P and ES-7 at four times normal speed. In other words, the transfer can be carried out in one fourth of the real time duration. It is of course possible to carry out a transfer at four times normal speed when backing up video and audio data recorded on the disk drive to the DSR-85/85P, or in the opposite direction when loading data backed up on the DSR-85/85P to the disk drive. Thus the time required is much shorter than with conventional equipment (for which, for example, transferring a 40-minute segment of video takes 40 minutes).

## Example System Configuration and Operation Flow

The following illustration shows an example system configuration for using the ClipLink function and a typical ClipLink operation flow.


Shooting
DVCAM camcorder (DSR-130/130P/ 300/300P/500WS/ 500WSP)
DVCAM standard cassette or DVCAM mini cassette
Index pictures: recorded on tape
ClipLink log data: recorded in cassette memory
ClipLink log data recorded onto DVCAM cassettes links shooting and editing operations.
ClipLink log data transfer
ES-7 EditStation non-linear editing system
DSR-85/1800/1600 a) or DSR-85P/1800P/1600P a) Digital Videocassette Recorder/Player
Index pictures
Video output (SDTI) b)
ClipLink log data
RS-422A interface
Editing
ES-7 EditStation non-linear editing system
DSR-85 c)/1800/1600 a) or DSR-85P c)/1800P/1600P a) Digital Videocassette Recorder/Player
Actual AV data
SDTI input/output b)

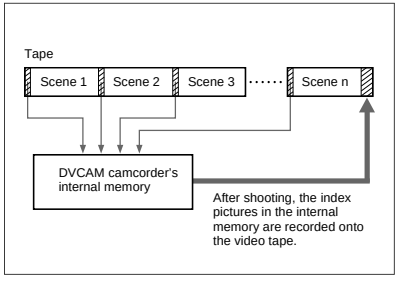
a) The DSR-1600/1600P is a videocassette player.
b) To transfer SDTI signals between the DSR-1800/1800P and ES-7 requires the optional DSBK-1802 SDTI (QSDI) Input/Output Board to be installed in the DSR-1800/1800P; to send an SDTI signal from the DSR-1600/1600P to the ES-7 requires the optional DSBK-1602 SDTI (QSDI) Output Board to be installed in the DSR-1600/1600P.
c) Between the DSR-85/85P and ES-7, quadruple transfer is possible through the SDTI interface.

## Data Generated When Shooting

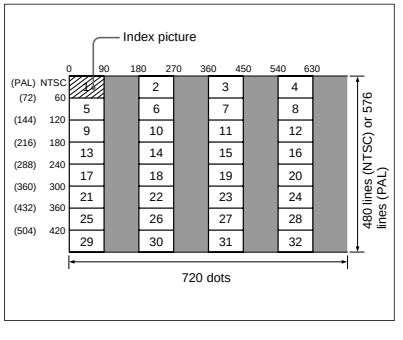
The following describes the kinds of data that is generated when using the ClipLink function.

### Index pictures

When shooting, a single-frame image from the Mark IN point at the start of each scene is recorded as a still picture into the camcorder's internal memory. These images are called "index pictures." When you finish shooting, the index pictures from all scenes are recorded onto the tape after the last scene.


Tape
Scene 1
Scene 2
Scene 3
Scene n
DVCAM camcorder's internal memory
After shooting, the index pictures in the internal memory are recorded onto the video tape.

Up to 32 index pictures can be recorded onto the tape space normally occupied by one frame, as shown below.




Seven frame spaces are reserved at the end of the last scene as a recording area for index pictures. (A cassette with 16 Kbits of cassette memory can record up to 198 index pictures, and a cassette with 4 Kbits of cassette memory can record up to 45 index pictures.)

### ClipLink log data

ClipLink log data can be recorded automatically or manually into the cassette memory for use as a convenient alternative to the conventional "shot list."

ClipLink log data includes the following items.

| ClipLink log data | Description |
|---|---|
| Reel number (cassette number) | Data (maximum length: 8 digits) consisting of alphanumeric characters and/or symbols (This is left blank at shipping.) |
| Scene number | A three-digit number from 001 to 198 (starts at 001 and is automatically incremented with each scene.) |
| Take number | This cannot be changed (set to "1" at shipping). |
| OK/NG | Indicates the OK/NG status of a particular scene. (In the OK case, nothing is recorded.) |
| Mark IN/OUT point time codes | These are the time codes that indicate the Mark IN and Mark OUT points for each scene (HH:MM:SS). These time codes are recorded when the camera has been set to MARK mode. The time code value is rounded up at each Mark IN point and rounded down at each Mark OUT point, to a whole number of seconds. *For details, see "Time codes recorded for Mark IN/OUT points" on page 77.* |
| Cue point time code | This is the time code that indicates the cue points (valid up to the frame digit). This time code is recorded when the camera has been set to CUE mode. When in this mode, the time codes at the start and end of a recording (the Rec IN and Rec OUT time codes) are automatically recorded as Mark IN and OUT points, respectively. |

## How to record ClipLink log data

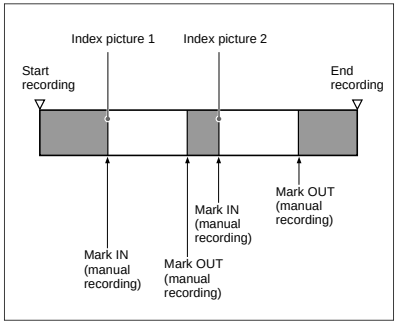
The following describes how to record the various ClipLink log data items.

### OK/NG status

To designate a scene as “NG,” press the NG button on the camera while shooting the scene or at any time before you begin shooting the next scene.
All scenes that do not receive an “NG” designation are recorded as “OK” scenes.
(When you exit the VCR recording mode, changing the OK/NG status is no longer possible.)

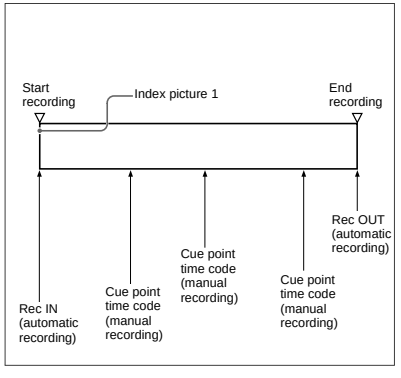
### Mark IN/OUT point time codes

This data is especially useful when shooting a video program for which a scenario has been created.
Set the camera to MARK mode before you start shooting. While shooting, each time you press the camera’s TAKE button, Mark IN and Mark OUT point time codes are recorded alternately.



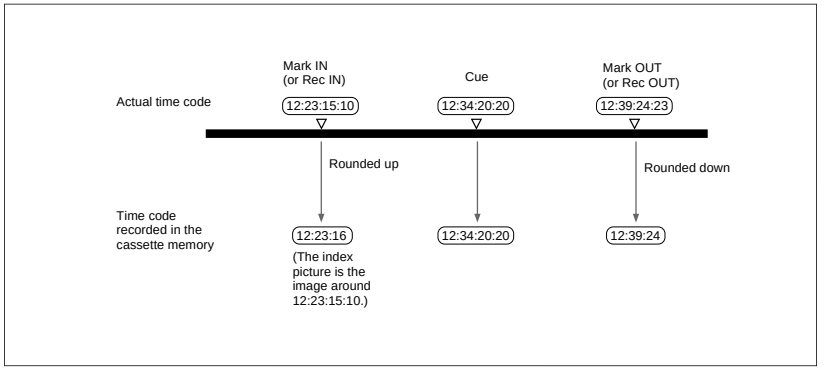

### Cue point time codes

This type of data is especially useful when shooting scenes that may contain unexpected events, such as when shooting for sports coverage or documentaries.
Set the camera to CUE mode before you start shooting. While shooting, each time you press the camera’s TAKE button, the current time code is recorded as a cue point time code.


Start recording
Index picture 1
End recording
Rec OUT (automatic recording)
Cue point time code (manual recording)
Cue point time code (manual recording)
Rec IN (automatic recording)
Cue point time code (manual recording)

## Time codes recorded for Mark IN/OUT points

There is a gap between actual time codes and Mark IN/OUT time codes recorded in the cassette memory, as shown in the figure below. The time code value is rounded up at each Mark IN point and rounded down at each Mark OUT point, to a whole number of seconds.




## Recording capacity for Mark IN/OUT point time codes and cue point time codes

When in MARK mode, up to 198 pairs of Mark IN and Mark OUT points can be recorded (if using a cassette with 16 Kbits of cassette memory).
When in CUE mode, up to 396 time code points (including all cue point time codes and all Mark (Rec) IN and Mark (Rec) OUT point time codes) can be recorded (if using a cassette with 16 Kbits of cassette memory).

# Glossary

**A/B roll editing**
An editing method that uses two or more playback VCRs to create special effects such as dissolve and wipe, and uses one record VCR to record the results of the editing. Using an editing control unit allows efficient control of the VCRs and very precise editing.

**AES/EBU format**
A unified format for digital audio signals. It allows a single connector to carry the signals for two channels.

**B–Y signal**
A chrominance signal determined by subtracting the Y (luminance) signal from the B (blue) signal. One of the component signals.

**C (chrominance) signal**
Color signal containing color information such as hue and saturation.

**Capstan**
A drive mechanism that moves the tape at a specified speed. Its rotation normally synchronizes with a reference sync signal.

**Component signals (YRB)**
A video signal consisting of a luminance signal (Y) and two chrominance signals (R–Y, B–Y).

**Composite signal**
A composite video signal containing video, burst and sync signals.

**Condensation**
Condensation of moisture on the tape transport mechanisms of VCRs including the head drum. If moisture condenses on the head drum, the tape adheres to the drum and causes malfunction.

**Drop frame mode**
Time code runs at 30 frames/sec. The NTSC system, however, runs at about 29.97 frames/sec. Drop frame mode adjusts this difference. The time code and video are synchronized by dropping the first two frames of the time code every minute, except at the ten-minute marks.

**Head drum**
A metal cylinder to which a video head is attached. This drum is rotated at high speeds in synchronization with the sync signal during recording and playback.

**Linear editing**
Editing while playing back video and audio signals recorded on video tape. *See also "Non-linear editing."*

**Loading**
When being loaded, the tape is pulled out of the cassette case and threaded along the specified tape path and wrapped round the drum to be ready for recording or playback. Generally, this is done automatically when you place the cassette at the cassette entrance of the VCR. Also called threading.

**Loop-through connection**
A connection which allows a signal input to an input connector to pass through the unit and exit from an output connector as input to external equipment. Also called bridging connection.

**Luminance signal**
The signal that determines the brightness of the picture. Also called Y signal. One of the component signals.

**Non-drop frame mode**
The number of frames of the time code and video run is not adjusted. When you use the time code in non-drop frame mode, the real playback time will be about 86 seconds shorter per day than the time code. If you edit frame by frame or if you determine the length of a shot by counting the time code, use drop frame mode.

**Non-linear editing**
Editing while playing back video and audio signals recorded on hard disks. Video scenes stored on disk can be cued up quickly, for increased editing efficiency. *See also "Linear editing."*

**PCM audio**
This is an audio signal represented by pulse code modulation. The analog audio signal is first broken down into a sequence of pulses, and these are then represented digitally.

**Preroll**
Running of a video tape to a prior to an edit-start point to enable the tape to reach a steady speed and to be synchronized with other video tapes.

**R–Y signal**
A chrominance signal determined by subtracting the Y (luminance) signal from the R (red) signal. One of the component signals.

**Reference video signal**
A video signal consisting of a sync signal or sync and burst signals, used as a reference.

**Setup (for DSR-1600)**
The difference between the reference black level and the blanking level of a composite signal.

**SMPTE**
Abbreviation of Society of Motion Picture and Television Engineers, a professional association established in the USA.

**S/N**
Abbreviation of Signal-to-Noise (ratio). The higher the S/N value, the less noise and higher the picture quality.

**Search mode**
A VCR operating mode used when searching for specific scenes, by viewing the video output or time code values while playing back the tape at various speeds in forward or reverse direction.

**Servo lock**
Synchronizing the drum rotation phase and tape transport phase with a reference signal during playback and recording so that the video heads scan the tape in the same pattern during playback and recording.

**Standby Off mode**
One of two conditions in the stop mode. The drum does not rotate and tape is slackened. There is no damage to the video heads and the tape, but the VCR is not ready for immediate recording or playback.

**Standby On mode**
One of two conditions in the stop mode. The drum is rotating and the tape is wrapped round the drum. The VCR is ready for recording or playback, so a still picture can be obtained.

**Subcarrier**
A sine wave imposed on the luminance portion of a video signal and modulated to carry color information. Its amplitude represents color saturation and its phase represents hue.

**Superimpose**
To put a set of characters onto a picture so that both can be seen at the same time.

**S-video**
A signal format in which Y (luminance) and C (chrominance) signals are separated to reduce interference between them so that noiseless images are reproduced.

**Sync signal**
A reference signal consisting of vertical and horizontal sync signals used for synchronizing the scanning patterns of the video camera and the monitor.

**TBC**
Abbreviation of Time Base Corrector. Electronic circuits to electrically stabilize the playback signals by removing color variation and roll in the playback picture caused by irregularity in drum rotation and tape movement. Time base correction reduces deterioration of picture quality when transmitting or copying playback signals.

**Threading**
*See "Loading."*

**Time code**
Signals recorded on the tape to supply information on tape position such as the hour, minute, second and frame, to assist in setting edit points or searching for particular scenes.

**Unloading**
When the EJECT button is pressed, the VCR automatically winds the tape back into the cassette case. Also called "Unthreading."

**User bits**
Sections of time code information consisting of a total of 32 bits that can be used for recording information such as date, tape ID number, program ID number, etc.

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SONY

3-204-692-**01**(1)

English

# *Option Board*

***(for DSR-1800/1600 series)***

**Installation Instructions**

## DSBK-1801/1802/1803
## DSBK-1601/1602

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DVCAM™







### For the customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### For the customers in Canada

This Class A digital apparatus complies with Canadian ICES-003.

### For the customers in Europe

This product with the CE marking complies with the EMC Directive (89/336/EEC) issued by the Commission of the European Community.
Compliance with this directive implies conformity to the following European standards:
• EN55103-1: Electromagnetic Interference (Emission)
• EN55103-2: Electromagnetic Susceptibility (Immunity)
This product is intended for use in the following Electromagnetic Environment(s):
E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors) and E4 (controlled EMC environment, ex. TV studio).

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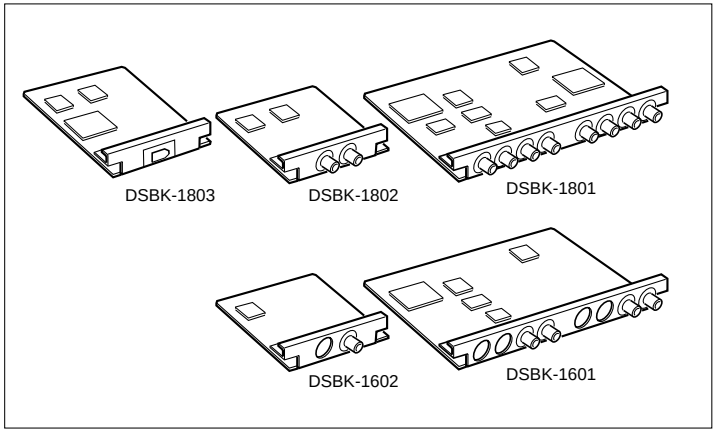
# Overview

The DSBK-1801/1802/1803/1601/1602 are optional boards for the Sony DSR-1800/1800P Digital Videocassette Recorder and DSR-1600/1600P Digital Videocassette Player. They have the following features.




### DSBK-1801 SDI (Serial Digital Interface)/AES/EBU Input/Output Board

When installed in the DSR-1800/1800P, enables input and output of digital video and audio signals in the D1 format, and also enables input and output of AES/EBU-format digital audio signals.



### DSBK-1802 SDTI (QSDI) Input/Output Board

When installed in the DSR-1800/1800P, allows SDTI (QSDI)-format video, audio, and timecode signals to be exchanged at normal speed with the Sony EditStation™. This board also allows compressed signals to be copied between the DSR-1800/1800P and other DVCAM VCRs.

### DSBK-1803 i.LINK[1]/DV Input/Output Board

When installed in the DSR-1800/1800P/1600/1600P, allows the videocassette recorder or player to be connected to the i.LINK compatible DV connectors of other Sony devices to perform editing and dubbing of digital signals.

### DSBK-1601 SDI/AES/EBU Output Board

When installed in the DSR-1600/1600P, enables output of digital video and audio signals in the D1 format, and also enables output of AES/EBU-format digital audio signals.

### DSBK-1602 SDTI (QSDI) Output Board

When installed in the DSR-1600/1600P, allows SDTI (QSDI)-format video, audio, and timecode signals to be output at normal speed to the Sony EditStation. This board also allows compressed signals to be output from the DSR-1600/1600P to other DVCAM VCRs.

1) i.LINK and ¡ are trademarks and indicate that this product conforms to IEEE1394-1995 specifications and their revisions.

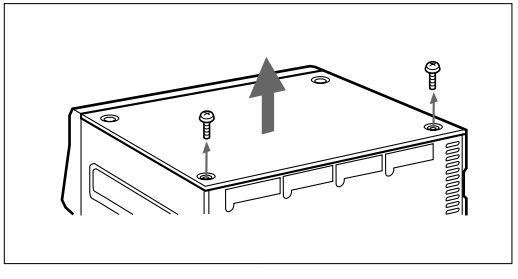
# Installation

**Cautions**

- If this option is installed incorrectly, personal injury or damage to peripheral items may occur due to fire, shock, or other accidental circumstances. To avoid such risks, installation should be performed by qualified service personnel.
- Before starting the installation operation, be sure to switch off the power of the videocassette recorder or player.

Proceed as follows to install an optional DSBK-1801/1802/1803/1601/1602 board in the DSR-1800/1800P/1600/1600P (called “the unit” below).

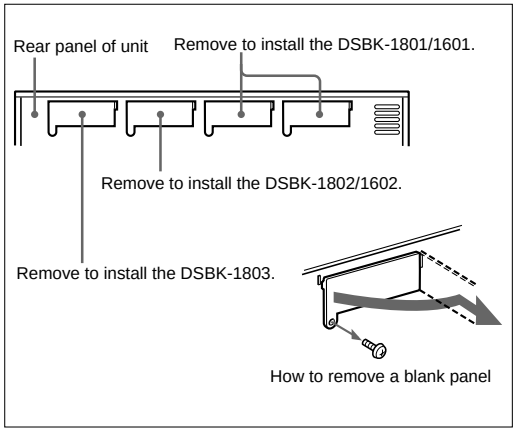
**1** Remove the top panel of the unit.







**2** Remove the appropriate blank panel from the rear panel of the unit.
The blank panel to remove depends on the optional board you are installing.
To install the DSBK-1801 or DSBK-1601, you need to remove two blank panels (see the figure below).


Rear panel of unit
Remove to install the DSBK-1801/1601.
Remove to install the DSBK-1802/1602.
Remove to install the DSBK-1803.
How to remove a blank panel

*(Continued)*

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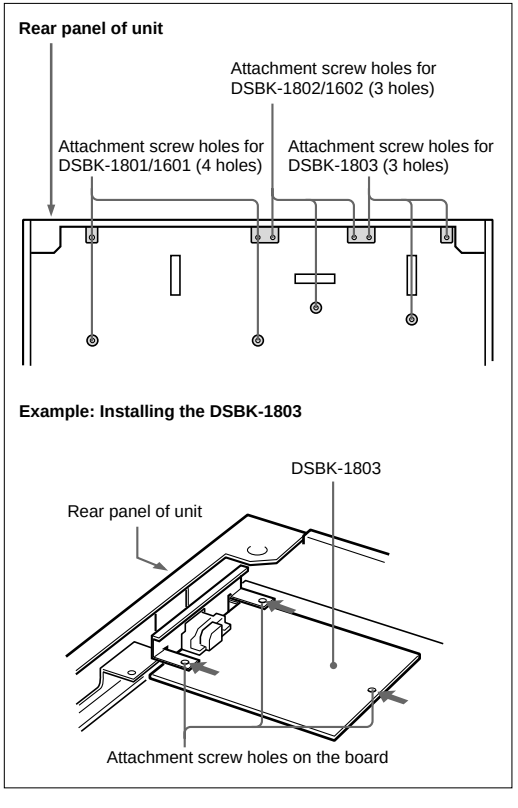
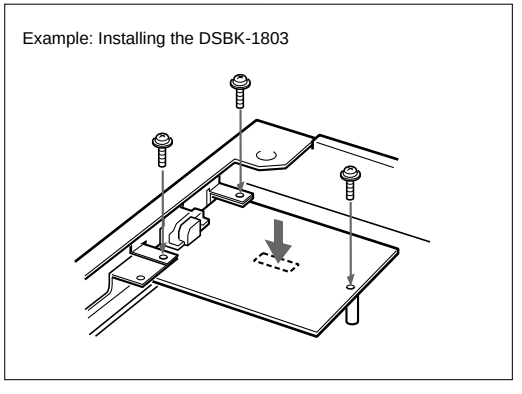
## Installation

**3** Align the attachment screw holes on the board with the attachment screw holes of the unit.


Rear panel of unit
Attachment screw holes for DSBK-1802/1602 (3 holes)
Attachment screw holes for DSBK-1801/1601 (4 holes)
Attachment screw holes for DSBK-1803 (3 holes)
Example: Installing the DSBK-1803
DSBK-1803
Rear panel of unit
Attachment screw holes on the board

**4** Press down on the center of the board to connect the connector of the board to the connector of the unit, and then fasten the board in place with the supplied screws.

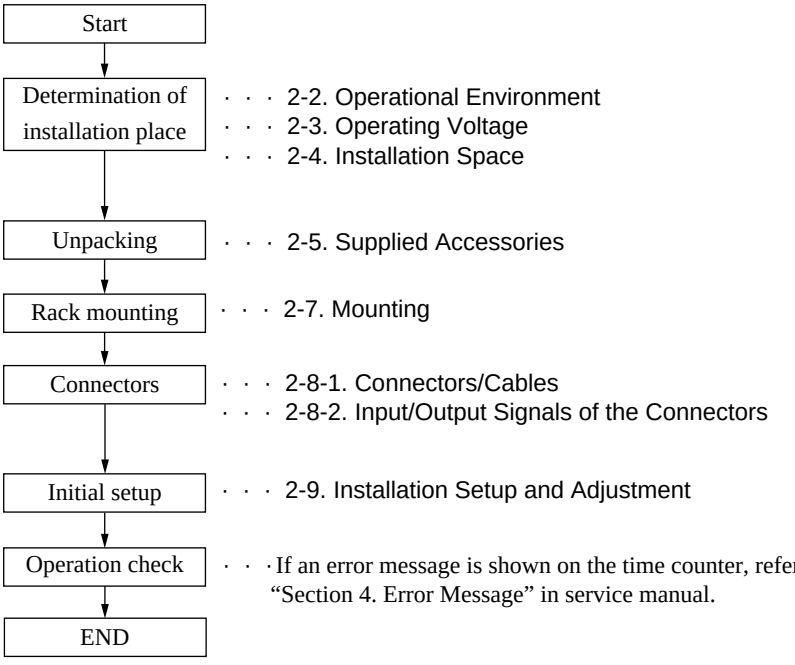



**5** Replace the top panel of the unit.

# Section 2
# Installation

Be sure to install the DSR-1800/P/1600/P in location satisfying the required operational environment described below to assure the DSR-1800/P/1600/P superior performance and to maintain the excellent serviceability and accessibility.

## 2-1. Installation Procedure


Start
Determination of installation place
· · · 2-2. Operational Environment
· · · 2-3. Operating Voltage
· · · 2-4. Installation Space
Unpacking
· · · 2-5. Supplied Accessories
Rack mounting
· · · 2-7. Mounting
Connectors
· · · 2-8-1. Connectors/Cables
· · · 2-8-2. Input/Output Signals of the Connectors
Initial setup
· · · 2-9. Installation Setup and Adjustment
Operation check
· · · If an error message is shown on the time counter, refer to "Section 4. Error Message" in service manual.
END

## 2-2. Operational Environment

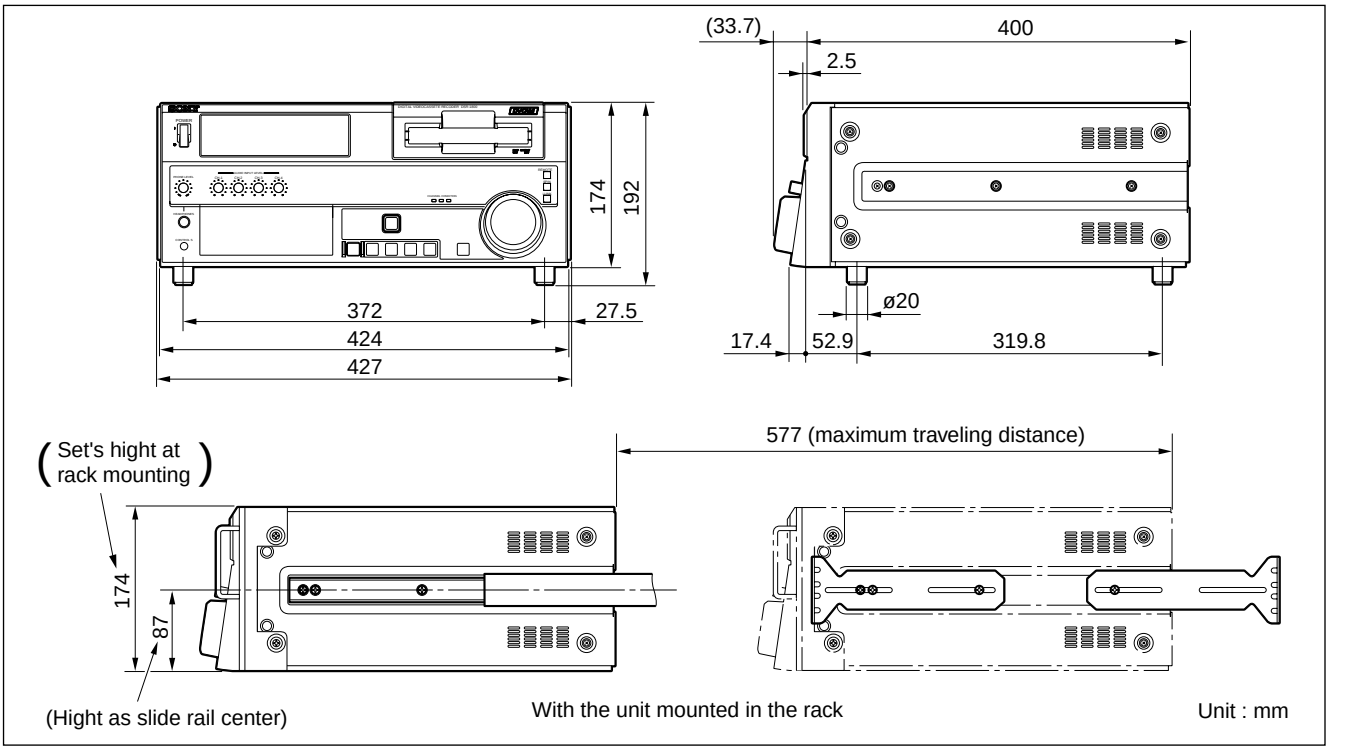
- Operating temperature : +5 ˚C to +40 ˚C
- Humidity : 80 % or less
- Storage temperature : −20 ˚C to +60 ˚C
- Locations to avoid :
  - Areas where the unit will be exposed to direct sunlight or any other strong lights.
  - Dusty areas or areas where it is subject to vibration.
  - Areas with strong electric or magnetic fields.
  - High-temperature environment.
    (Good air circulation is essential to prevent internal heat build-up. Place the unit in location with sufficient air circulation. Do not block the ventilation holes on the sides of the cabinet and the rear panel.)
- Horizontal condition : within ±30 °

## 2-3. Operating Voltage

- Power voltage : AC 100 V to 240 V
- Power frequency : 50/60 Hz
- Power consumption : 100 W (DSR-1800/P)
  70 W (DSR-1600/P)

## 2-4. Installation Space

- The rear side must be at least 40 cm away from the walls for ventilation and maintenance.
- When the unit is operated on a desk or similar condition, assure that the clearance above the unit is at least 40 cm to provide accessibility to the printed circuit boards and other mechanical parts. Note that it is not necessary to provide the space when the unit is mounted in a rack since the printed circuit boards can be repaired after it is pulled out.




## 2-5. Supplied Accessories

- AC power cord : 1
- Operating instructions : 1

## 2-6. Optional Accessories

- SDI/AES/EBU input/output board : DSBK-1801 (DSR-1800/P)
- SDI/AES/EBU output board : DSBK-1601 (DSR-1600/P)
- STDI (QSDI) input/output board : DSBK-1802 (DSR-1800/P)
- STDI (QSDI) output board : DSBK-1602 (DSR-1600/P)
- i.LINK/DV input/output board : DSBK-1803
- TBC remote control unit : UVR-60/60P
- Rack mount Kit : RMM-130
  (The unit can be mounted in a 19-inch standard rack)
- Remote control cable : RCC-5G/10G/30G
- Cleaning cassette tape : DV12CL (Standard size), DVM12CL (Mini size)
- Digital video cassette : PDVM-12ME/22ME/32ME/40ME (Mini size)
- Digital video cassette : PDV-64ME/94ME/124ME/184ME (Standard size)

## 2-7. Rack Mounting

The unit can be mounted in a 19-inch standard rack.
It is recommended to use the following kit.

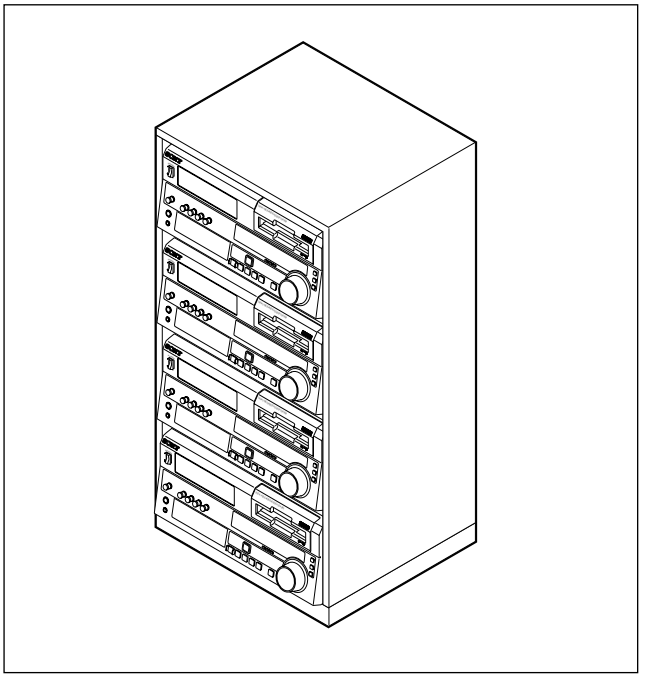
Rack Mount Kit : RMM-130
(optional accessory)

or

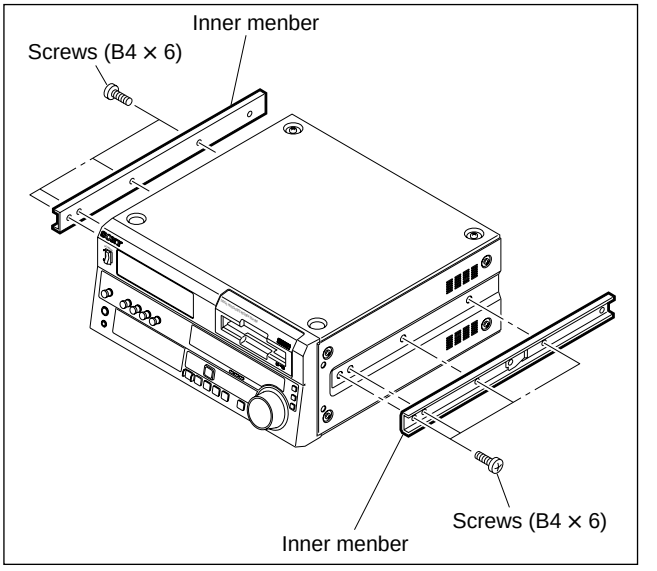
RACK-MOUNT SLIDES : MODEL 305 slide length 22 inch (ACCURIDE)

**Note for rack mounting :**

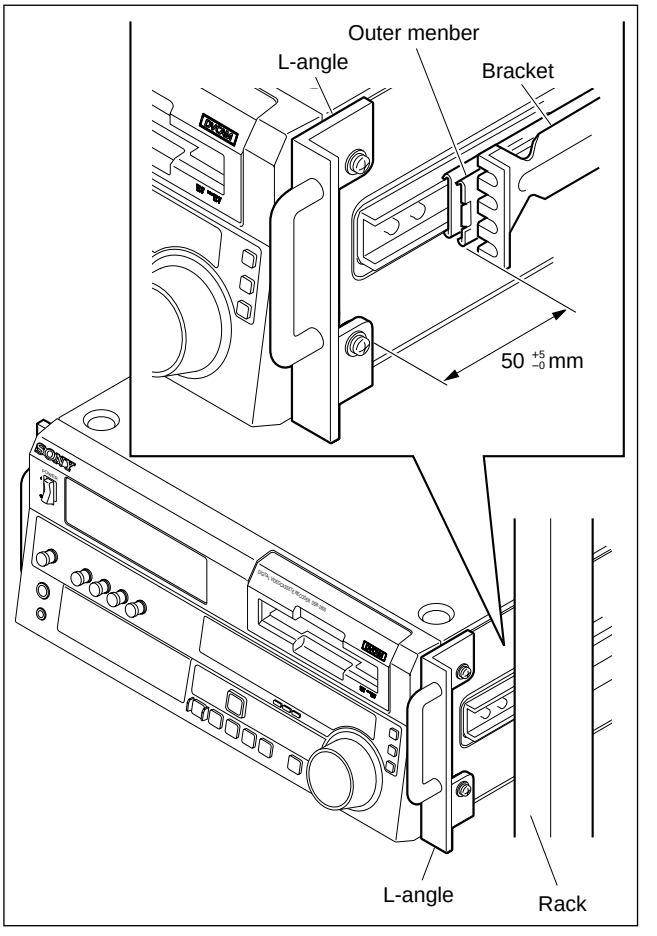
- When several VTRs are mounted in a rack, it is recommended to install a fan for ventilation. Good air circulation is essential to prevent internal heat build-up in a rack.
- The unit must be kept in an operating temperature range from +5 ˚ to +40 ˚C.
- Never remove an upper panel and lower panel during rack mounting.
- Be sure to secure the rack to the floor to avoid accidents when a unit is pulled out.
- Connect long enough cables on the connector panel, considering that the unit is pulled out.



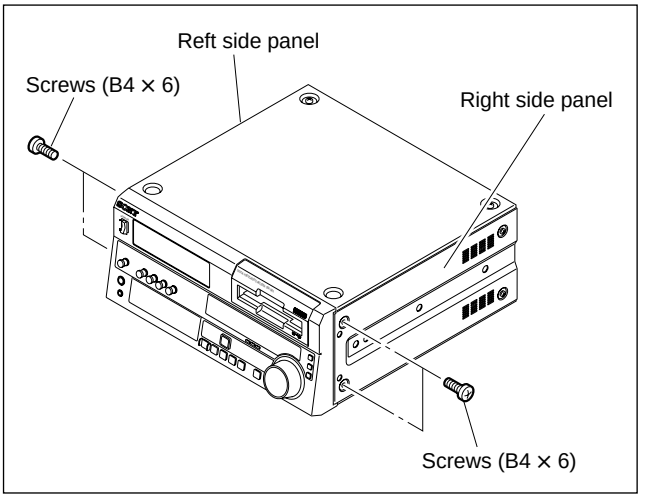
1. Remove the four screws on right and left side panels. And install the Inner Members of the rails to the right and left side panels with the screws removed.



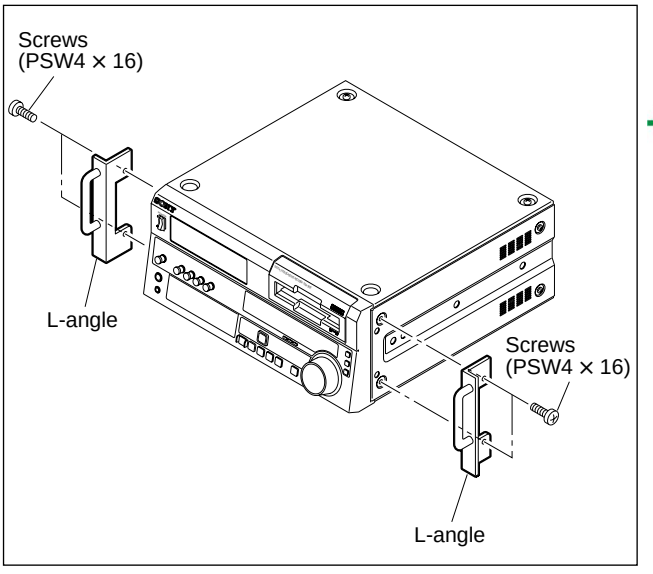

2. Install the Outer Member Brackets of the slide rails to the rack. Adjust the distance from the edge of the slide rail to the outside of the rack so that it meets the required specification.



3. Remove the two screws (B4 × 6) on the right and left side panels. (Be careful not to lose these four screws.)




4. Install the L-angles to the holes described in step 3 with the supplied screws (PSW4 × 16) in RMM-130 for these L-angles.




**Note**

Never use screws (PSW4 × 16) to install the right and left side panels without L-angles. Be sure to use the screws (B4 × 6) removed in step 3. Screws for L-angles are longer than ones for the side panels. Therefore, using the screws (PSW4 × 16) may cause trouble in the unit.

# 2-8. Connectors

## 2-8-1. Connectors/Cables (DSR-1800/P)

When external cables are connected to the connector on a connector panel during maintenance, the following (or equivalents) must be used.

| Connectors on DSR-1800/P Side | Connector/Cable | |
|---|---|---|
| **Panel indication** | **Designation** | **Sony Part No.** |
| ANALOG IN<br>REF. VIDEO IN<br>TIME CODE IN<br>VIDEO IN<br>COMPONENT VIDEO IN Y/R-Y/B-Y | BNC, MALE | 1-560-069-11 |
| S VIDEO IN | YC-15 V (1.5 m) | optional accessory |
| AUDIO IN CH-1/2/3/4 | XLR 3P, MALE | 1-508-084-11 |
| ANALOG OUT<br>REF. VIDEO OUT<br>TIME CODE OUT<br>VIDEO OUT 1/2<br>COMPONENT VIDEO OUT Y/R-Y/B-Y | BNC, MALE | 1-560-069-11 |
| MONITOR AUDIO | PIN PLUG | Standard Product |
| S VIDEO OUT | YC-15 V (1.5 m) | optional accessory |
| AUDIO OUT CH-1/2/3/4 | XLR 3P, FEMALE | 1-508-083-11 |
| i.LINK | IEEE1394 6P (1 m)<br>IEEE1394 6P (3.5 m) | 1-782-408-21<br>1-791-184-11 |
| SDI INPUT | BNC, MALE | 1-560-069-11 |
| SDI OUTPUT 1/2 | BNC, MALE | 1-560-069-11 |
| SDTI (QSDI) INPUT | BNC, MALE | 1-560-069-11 |
| SDTI (QSDI) OUTPUT | BNC, MALE | 1-560-069-11 |
| DIGITAL AUDIO (AES/EBU)<br>INPUT CH-1/2, CH-3/4 | BNC, MALE | 1-560-069-11 |
| OUTPUT CH-1/2, CH-3/4 | BNC, MALE | 1-560-069-11 |
| VIDEO CONTROL | D-SUB 15P, FEMALE | 1-561-610-21 |
| REMOTE | D-SUB 9P, MALE | 1-560-651-11 |

## 2-8-2. Connectors/Cables (DSR-1600/P)

When external cables are connected to the connector on a connector panel during maintenance, the following (or equivalents) must be used.

| Connectors on DSR-1600/P Side | Connector/Cable | |
|---|---|---|
| **Panel indication** | **Designation** | **Sony Part No.** |
| ANALOG IN<br>REF. VIDEO IN | BNC, MALE | 1-560-069-11 |
| ANALOG OUT<br>REF. VIDEO OUT<br>TIME CODE OUT<br>VIDEO OUT 1/2<br>COMPONENT VIDEO OUT Y/R-Y/B-Y | BNC, MALE | 1-560-069-11 |
| MONITOR AUDIO | PIN PLUG | Standard Product |
| S VIDEO OUT | YC-15 V (1.5 m) | optional accessory |
| AUDIO OUT CH-1/2/3/4 | XLR 3P, FEMALE | 1-508-083-11 |
| i.LINK | IEEE1394 6P (1 m)<br>IEEE1394 6P (3.5 m) | 1-782-408-21<br>1-791-184-11 |
| SDI OUTPUT 1/2 | BNC, MALE | 1-560-069-11 |
| SDTI (QSDI) OUTPUT | BNC, MALE | 1-560-069-11 |
| DIGITAL AUDIO (AES/EBU)<br>OUTPUT CH-1/2, CH-3/4 | BNC, MALE<br>BNC, MALE | 1-560-069-11<br>1-560-069-11 |
| VIDEO CONTROL | D-SUB 15P, FEMALE | 1-561-610-21 |
| REMOTE | D-SUB 9P, MALE | 1-560-651-11 |

## 2-8-3. Input/Output Signals of the Connectors

### INPUT (DSR-1800/P)

| | |
|---|---|
| REF.VIDEO : | BNC ×2 (loop-through)<br>NTSC black burst, 0.286 V p-p, 75 Ω, sync negative<br>PAL black burst, 0.3 Vp-p , 75 Ω sync negative |
| VIDEO IN : | BNC ×2 (loop-through)<br>Composite, 1.0 V p-p, 75 Ω, sync negative |
| COMPONENT VIDEO : | BNC ×3<br>Y : 1.0 V p-p, 75 Ω, sync negative<br>R-Y/B-Y : 0.7 V p-p, 75 Ω (NTSC : 75 % PAL : 100 %) |
| S VIDEO : | DIN 4P ×1<br>Y : 1.0 V p-p, 75 Ω, sync negative<br>C : NTSC 0.286 V p-p (burst level), 75 Ω<br>PAL 0.3 V p-p (burst level), 75 Ω |
| SDI INPUT (DSBK-1801 required) : | BNC ×2 (active-through)<br>Serial digital interface format (270 Mbps),<br>SMPTE 259M (NTSC)/ITU-R BT.656 (PAL) |
| SDTI (QSDI) (DSBK-1802 required) : | BNC ×1<br>Serial data transport interface<br>(DVCAM compression signal : Video + Audio + TC signal)<br>SMPTE 305M/322M |
| AUDIO IN : | XLR 3P ×4<br>Reference level switchable (−6/0/+4 dBu), 600 Ω/10 kΩ switchable, balanced |
| DIGITAL AUDIO (AES/EBU) :<br>(DSBK-1801 required) | BNC ×2 (conformed with AES-3id-1995) |
| TIME CODE : | BNC ×1<br>SMPTE (NTSC)/EBU (PAL)<br>0.5 to 18 V p-p, 3 kΩ, unbalanced |
| i.LINK (DSBK-1803 required) : | IEEE1394 connector 6P ×1 |

### INPUT (DSR-1600/P)

| | |
|---|---|
| REF.VIDEO : | BNC ×2 (loop-through)<br>NTSC black burst, 0.286 V p-p, 75 Ω, sync negative<br>PAL black burst, 0.3 Vp-p , 75 Ω sync negative |

### OUTPUT (DSR-1800/P/1600/P)

| | |
|---|---|
| REF.VIDEO : | BNC ×1<br>NTSC composite sync, 0.286 V p-p, 75 Ω, sync negative (with burst signal)<br>PAL composite sync, 0.3 V p-p, 75 Ω, sync negative (with burst signal) |
| VIDEO OUT1, 2, 3(SUPER) : | BNC ×3<br>Composite, 1.0 V p-p, 75 Ω, sync negative |
| COMPONENT VIDEO : | BNC ×3<br>Y : 1.0 V p-p, 75 Ω, sync negative<br>R-Y/B-Y : 0.7 V p-p, 75 Ω (NTSC : 75 % PAL : 100 %) |
| S VIDEO : | DIN 4P ×1<br>Y : 1.0 Vp-p, 75 Ω, sync negative<br>C : NTSC 0.286 V p-p (burst level), 75 Ω<br>PAL 0.3 V p-p (burst level), 75 Ω |
| SDI OUTPUT1, 2, 3(SUPER) :<br>(DSBK-1801/1601 required) | BNC ×3<br>Serial digital interface format (270 Mbps),<br>SMPTE 259M (NTSC)/ITU-R BT.656 (PAL) |
| SDTI (QSDI) (DSBK-1802/1602 required) : | BNC ×1<br>Serial data transport interface<br>(DVCAM compression signal : Video + Audio + TC signal)<br>SMPTE 305M/322M |
| AUDIO OUT : | XLR 3P ×4, MALE<br>+4 dBu, 600 Ω load, balanced (low impedance) |
| MONITOR AUDIO : | PHONO JACK ×1<br>−6 dBu, 47 kΩ load, unbalanced |
| DIGITAL AUDIO (DSBK-1801 required) : | BNC ×2 (conformed with AES-3id-1995) |
| TIME CODE : | BNC ×1<br>SMPTE (NTSC)/EBU (PAL)<br>2.2 V p-p ±3.0 dB, 600 Ω, unbalanced |
| i.LINK (DSBK-1803 required) : | IEEE1394 connector 6P ×1 |

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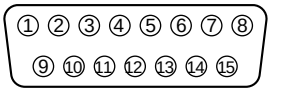
## VIDEO CONTROL (D-sub 15 pin : MALE)

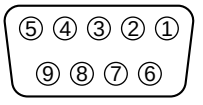
<external view>




| Pin No. | Signal | Operating Voltage | IN/OUT |
|---|---|---|---|
| 1 | SYNC CONTROL | −5 V to +5 V | IN |
| 2 | HUE CONTROL | −5 V to +5 V | IN |
| 3 | SC CONTROL | −5 V to +5 V | IN |
| 4 | VIDEO LEVEL CONTROL | −5 V to +5 V | IN |
| 5 | SET UP CONTROL | −5 V to +5 V | IN |
| 6 | CHROMA LEVEL CONTROL | −5 V to +5 V | IN |
| 7 | −9 V SUPPLY | −9 V | OUT |
| 8 | GND | | |
| 9 | FRAME GND | | |
| 10 | – | – | – |
| 11 | – | – | – |
| 12 | – | – | – |
| 13 | Y/C DELAY CONTROL | −5 V to +5 V | IN |
| 14 | | – | – |
| 15 | +9 V SUPPLY | +9 V | OUT |

## REMOTE (D-sub 9 pin : MALE)

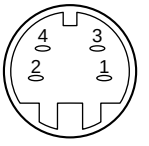
<external view>




| Pin No. | Controlling Device | Controlled Device |
|---|---|---|
| 1 | FRAME GROUND | FRAME GROUND |
| 2 | RECEIVE A | TRANSMIT A |
| 3 | TRANSMIT B | RECEIVE B |
| 4 | TRANSMIT COMMON | RECEIVE COMMON |
| 5 | PRIORITY IN | PRIORITY OUT |
| 6 | RECEIVE COMMON | TRANSMIT COMMON |
| 7 | RECEIVE B | TRANSMIT B |
| 8 | TRANSMIT A | RECEIVE A |
| 9 | FRAME GROUND | FRAME GROUND |

## S VIDEO (Circular 4 pin)

<external view>




| Pin No. | Output Signal |
|---|---|
| 1 | Y (G) |
| 2 | C (G) |
| 3 | Y (X) |
| 4 | C (X) |

# 2-9. Installation Setup and Adjustment

## 2-9-1. Switch Settings on the Connector Panel

When the unit is installed, be sure to perform the following setup and adjustment. If the adjustment is not performed, the unit may not operate properly.
Refer to the operating instruction “Chapter 1 Overview” for setup and adjustment.

### [Connector Panel]

(1) The setting of audio input level/600 Ω (Level select/600 Ω ON/OFF) switch.

Set these switches for each channel as shown in the following table, according to the audio input levels to the AUDIO IN CH-1 to CH-4 connectors and the required impedance.

### Settings of the AUDIO IN LEVEL/600 Ω switches

| Audio input | | Switch setting |
|---|---|---|
| **Level** | **Impedance** | |
| −60 dBu<br>(microphone input) | High Impedance<br>(about 20 kΩ) | LOW-OFF<br>(left position) |
| +4 dBu/0 dBu/−3 dBu[a)]/−6 dBu<br>(line audio input) | High Impedance<br>(about 20 kΩ) | HIGH-OFF<br>(middle position) |
| +4 dBu/0 dBu/−3 dBu[a)]/−6 dBu<br>(line audio input) | 600 Ω | HIGH-ON<br>(right position) |

a) : Selectable on DSR-1800P only

## 2-9-2. Front Panel Setting

### [Control Panel]

(1) VIDEO INPUT select button setting :
- COMPOSITE ; Composite video signal
- Y-R, B ; Component video signal (Betacam)
- S VIDEO ; Y/C separation type S Video signal
- SDI ; Component digital signal (DSBK-1801 required)
- SG ; Video test signal generated by the internal signal generator selected with the INT VIDEO SG menu item. (Refer to Operating Instructions “Chapter 4 Menu”.)
- V : SDTI ; Digital video signal SDTI (QSDI) format

**Notes**

- In this case, audio is select in AUDIO INPUT SELECT.
- In this case, video signal frame is delayed toward for audio signal.

(2) SDTI/i.LINK button :
- SDTI (QSDI) ; Digital video/audio signal in SDTI (QSDI) format (DSBK-1802 required)
- i.LINK ; Digital video and audio signals in i.LINK-compatible DV format (DSBK-1803 required)

(3) AUDIO INPUT SELECT : (CH1, 1/2 and CH2, 3/4)

| | |
|---|---|
| ANALOG ; | Analog audio signal |
| AES/EBU ; | Digital audio signal in AES/EBU format (DSBK-1801 required) |
| SDI ; | SDI audio signal (DSBK-1801 required) |
| SG ; | Audio test signal generated by the internal signal generator selected with the INT AUDIO SG menu item. (Refer to Operating Instructions “Chapter 4 Menu”.) |

**[MENU Panel]**

(1) SYNC PHASE : Adjusts the H sync phase of video output signal with reference to the REF. IN signal.

(2) SC PHASE : Adjusts the subcarrier phase of the composite video output signal with reference to the REF. IN signal.

(3) MENU : Turns on and off the menu mode.

(4) [↑][↓][←][→] : Used for item setting in the menu, and for setting the points A and B of REPEAT.

(5) RESET (NO) : Used for the following purposes :
- Initialization of the menu setting
- “No” reply from the DSR-1800/P/1600/P to the inquiry.
- COUNTER reset (on display block)

(6) SET (YES) : Used for the following purposes :
- Storing the menu and setting the points A and B of REPEAT
- “Yes” reply from the DSR-1800/P/1600/P to the inquiry.

(7) TC PRESET (DSR-1800/P) : Used for setting the TC initial value and UB data (on display block).

(8) MONITOR SELECT switches

Use these switches to select the channels for audio output via the AUDIO MONITOR OUT connector on the rear panel and the HEADPHONES connector on the front panel.

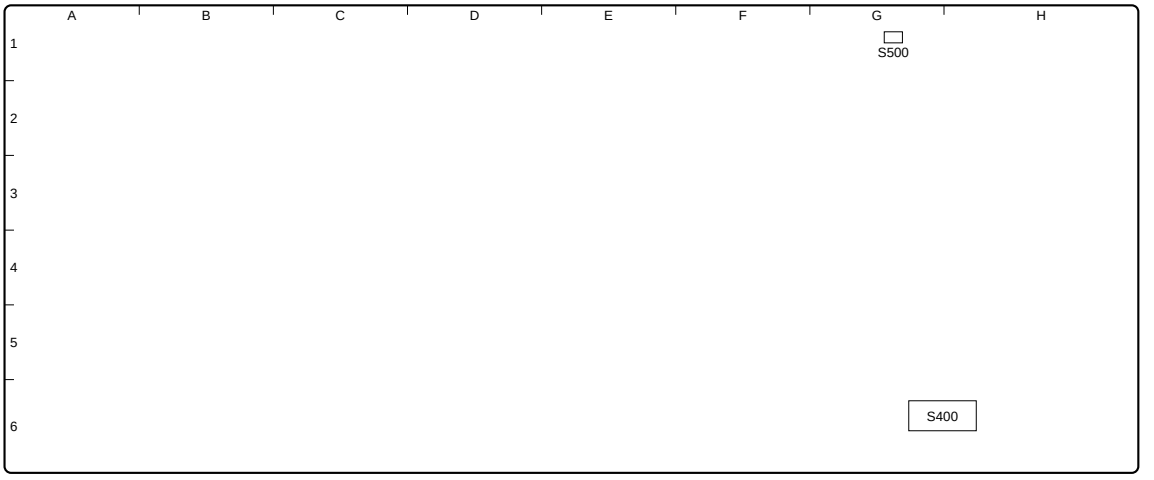
Use the left switch to select the basic channel setting, then use the right switch to select the output format (monaural, stereo, or mix).

The following table lists the correspondence of left/right switch settings and channel/output format selections.

| Switch setting | | Selected channel and output format | |
|---|---|---|---|
| **Left switch** | **Right switch** | **HEADPHONES connector** | **AUDIO MONITOR OUT connector** |
| | | Channel 1 only (monaural) | Channel 1 only (monaural) |
| | | Channel 1 and 2 (stereo) | Channel 1 and 2 (mix) |
| | | Channel 2 only (monaural) | Channel 2 only (monaural) |
| | | Channel 3 only (monaural) | Channel 3 only (monaural) |
| | | Channel 3 and 4 (stereo) | Channel 3 and 4 (mix) |
| | | Channel 4 only (monaural) | Channel 4 only (monaural) |

## 2-9-3. On-board Switch Setting

### SSP-24 board (DSR-1800/P)



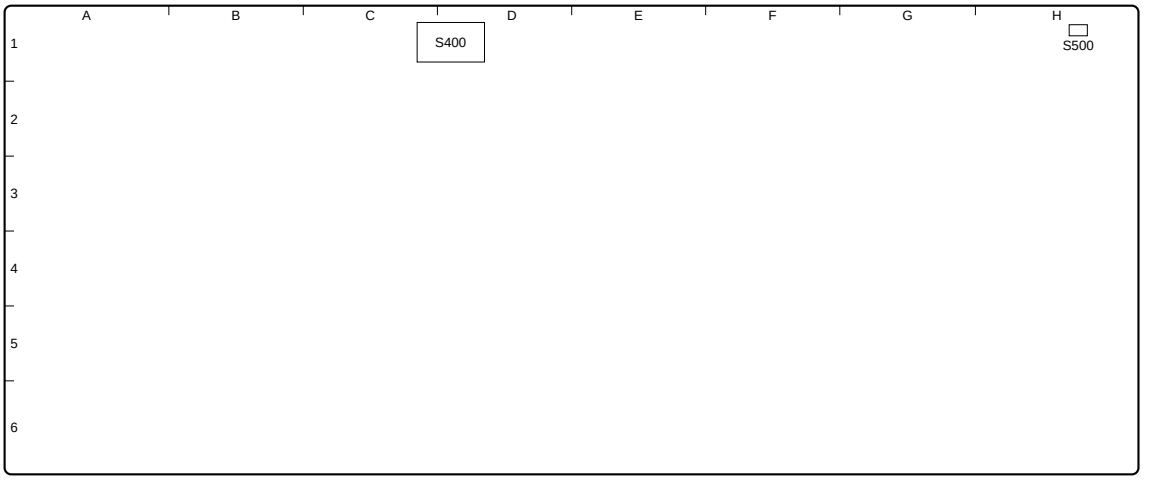

SS-24 BOARD (A SIDE)

**Note**

Do not change the setting of switches when the “factory use” is shown in the description.

| Ref No. | Description | Factory Setting |
|---|---|---|
| S400-1 | HOURS METER can enter reset mode. | OFF |
| S400-2 | factory use | OFF |
| S400-3 | factory use | OFF |
| S400-4 | This defeats an error detection of mechanism and setvo system alignment.<br>Use this switch when operating the machine with cassette compartment removed. | OFF |
| S400-5 | factory use | OFF |
| S400-6 | factory use | OFF |
| S400-7, 8 | Destination setting<br>Destination / bit-7 / bit-8<br>UC / OFF / OFF<br>J / ON / OFF<br>CE / OFF / ON | — |
| S500 | System reset button | — |

### SSP-23 board (DSR-1600/P)




SSP-23 BOARD (A SIDE)

**Note**

Do not change the setting of switches when the “factory use” is shown in the description.

| Ref No. | Description | Factory Setting |
|---|---|---|
| S400-1 | HOURS METER can enter reset mode. | OFF |
| S400-2 | factory use | OFF |
| S400-3 | factory use | OFF |
| S400-4 | This defeats an error detection of mechanism and setvo system alignment.<br>Use this switch when operating the machine with cassette compartment removed. | OFF |
| S400-5 | factory use | OFF |
| S400-6 | factory use | OFF |
| S400-7, 8 | Destination setting<br>Destination / bit-7 / bit-8<br>UC / OFF / OFF<br>J / ON / OFF<br>CE / OFF / ON | — |
| S500 | System reset button | — |

## 2-9-4. System Adjustment After Installation

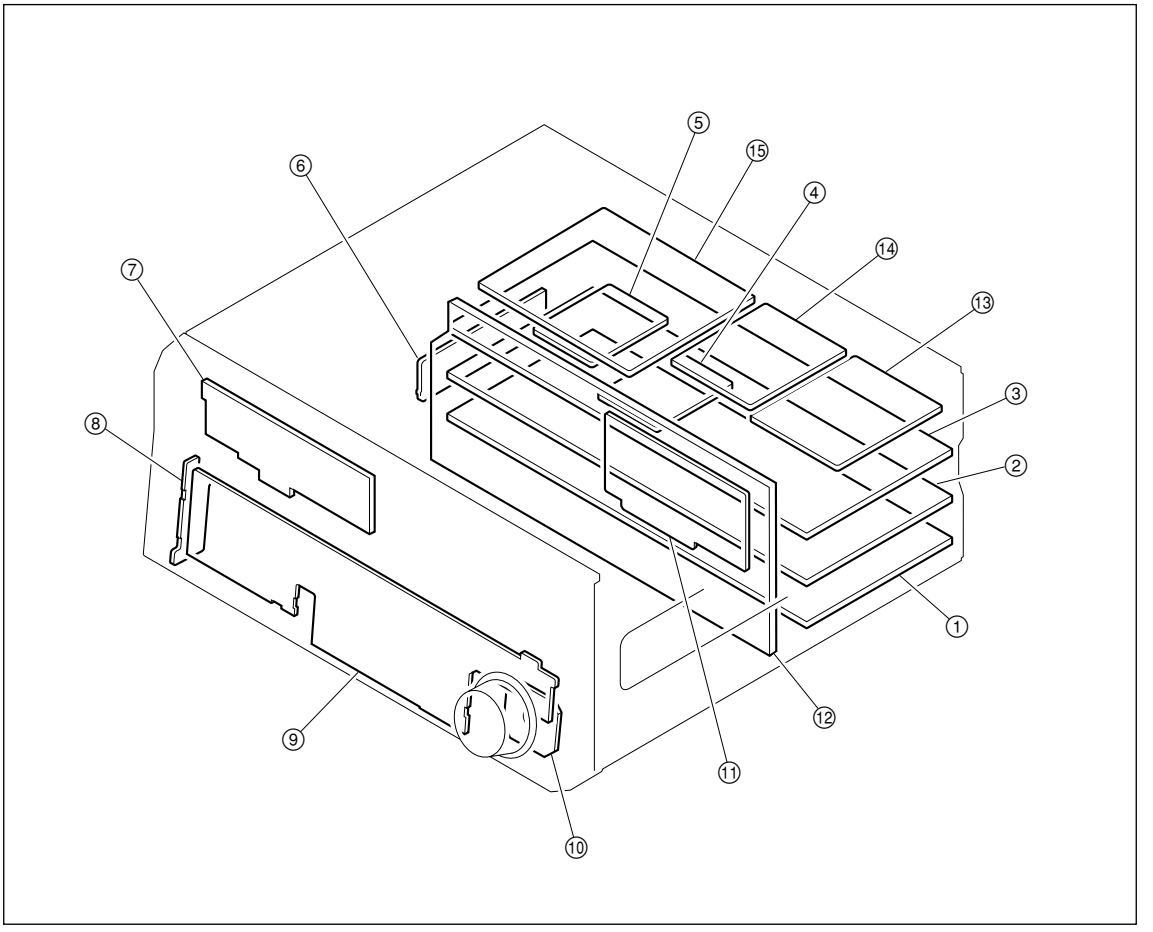
Observe the following precautions when this equipment is used for editing system.

- The REF. VIDEO INPUT requires video signal which is in comfomity with the RS-170A.
- Adjust the sync phase of this equipment to the system sync with [SYNC PHASE] control on the sub control panel.
- Adjust the SCH phase of this equipment to the system SCH with [SC PHASE] control on the sub control panel.
- When this unit is connected to a switcher that does not have the sync switching function, the SYNC/BURST level adjustment is required.

# Section 3
# Service Overview

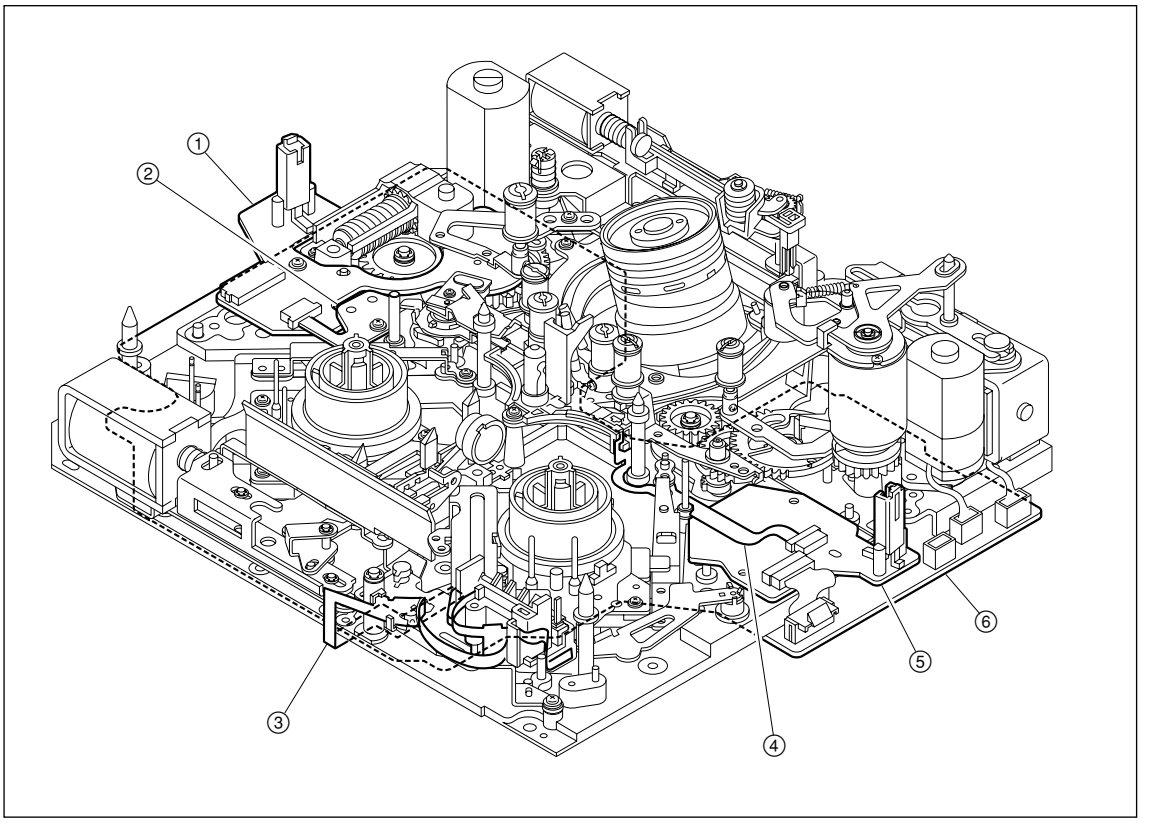
## 3-1. Location of Main Parts

### 3-1-1. Location of Printed Circuit Boards



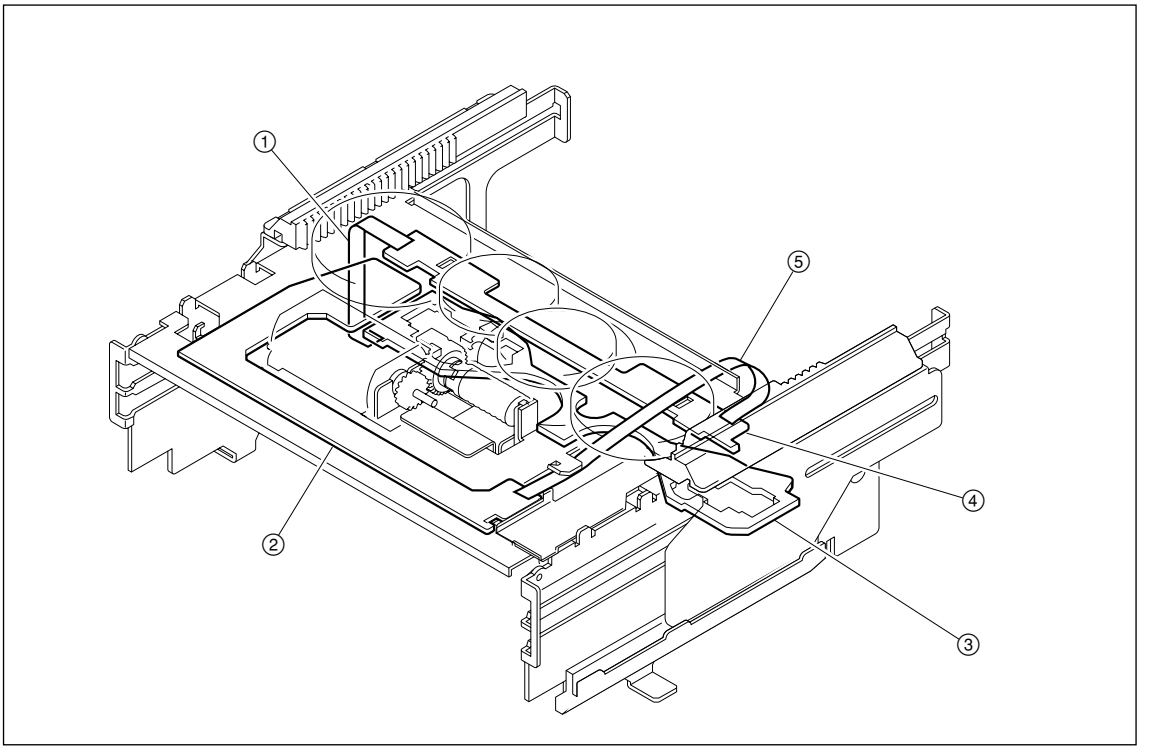
| NO. | Board Name | Circuit Configuration |
|---|---|---|
| ① | SSP-24 (DSR-1800/P) | System/servo/digital process |
| | IF-820 (DSR-1600/P) | Analog video/audio input･output process |
| ② | VPR-71 (DSR-1800/P) | Analog video input･output process/reference |
| ③ | DPR-175 (DSR-1800/P) | Digital process |
| | SSP-23 (DSR-1600/P) | System/servo/analog audio input･output process |
| ④ | FU-78R (DSR-1800/P) | Digital process (REC) |
| ⑤ | FU-78P | Digital process (PB) |
| ⑥ | AC-212 | Line firter |
| ⑦ | DY-16 | Fluorescent display board/audio meter |
| ⑧ | HP-108 | Headphone interface |
| ⑨ | KY-484 (DSR-1800/P)<br>KY-484A (DSR-1600/P) | Operation panel |
| ⑩ | PTC-100 | Search dial sensor |
| ⑪ | RP-120 (DSR-1800/P)<br>PRE-45 (DSR-1600/P) | RF REC/PB, ATF detection<br>RF PB, ATF detection |
| ⑫ | MB-920 (DSR-1800/P)<br>MB-927 (DSR-1600/P) | Mother board |
| ⑬ | DV-26 (DSBK-1803) | i.LINK/DV input･output board (Option) |
| ⑭ | SDI-61 (DSBK-1802) | SDTI (QSDI) input･output board (Option : DSR-1800/P) |
| | SDI-61A (DSBK-1602) | SDTI (QSDI) output board (Option : DSR-1600/P) |
| ⑮ | SDI-62 (DSBK-1801) | SDI/AES/EBU input･output board (Option : DSR-1800/P) |
| | SDI-62A (DSBK-1601) | SDI/AES/EBU output board (Option : DSR-1600/P) |

## Locations of Mechanism Deck




| No. | Board Name | Circuit Configuration |
|---|---|---|
| ① | SE-521 | Mode sensor/tape end sensor/loading motor FG sensor |
| ② | SE-538 | Tension sensor |
| ③ | CN-1863 | Sensor input/output board |
| ④ | SE-525 | LED signal board |
| ⑤ | SE-522 | Tape top sensor/reel position sensor (Mini/M/Standard) |
| ⑥ | DR-428 | Drum/mechanism control |

## Locations of Cassette Compartment




| No. | Board Name | Circuit Configuration |
|---|---|---|
| ① | CN-2021 | Intermediate board between CC-84 and CC-83 |
| ② | CC-83 | Cassette compartment mode detection/intermediate board |
| ③ | CC-85 | Cassette compartment cassette in detection |
| ④ | CC-84 | Cassette compartment cassette type detection |
| ⑤ | CN-2022 | Intermediate board between CC-85 and CC-84 |

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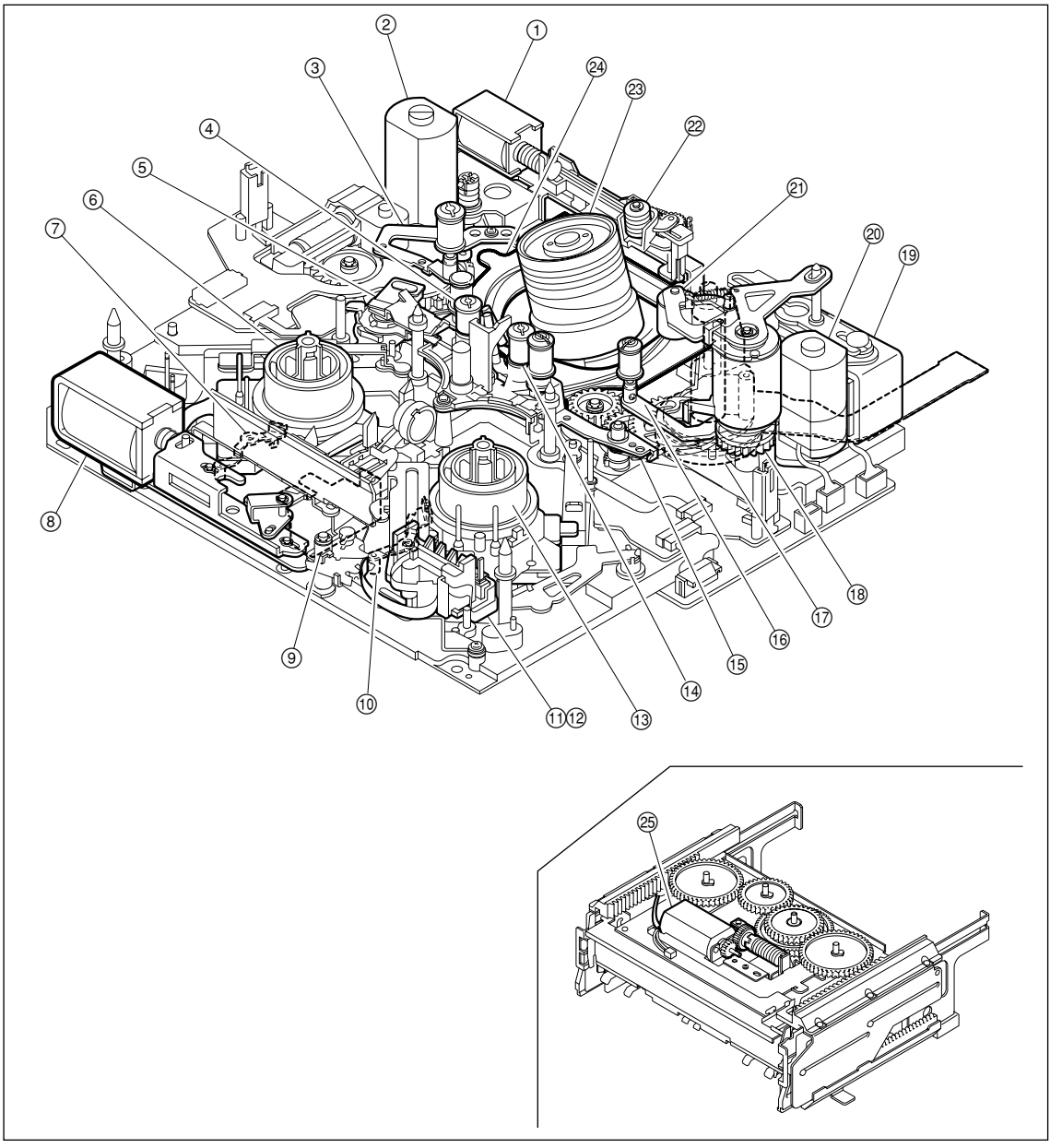
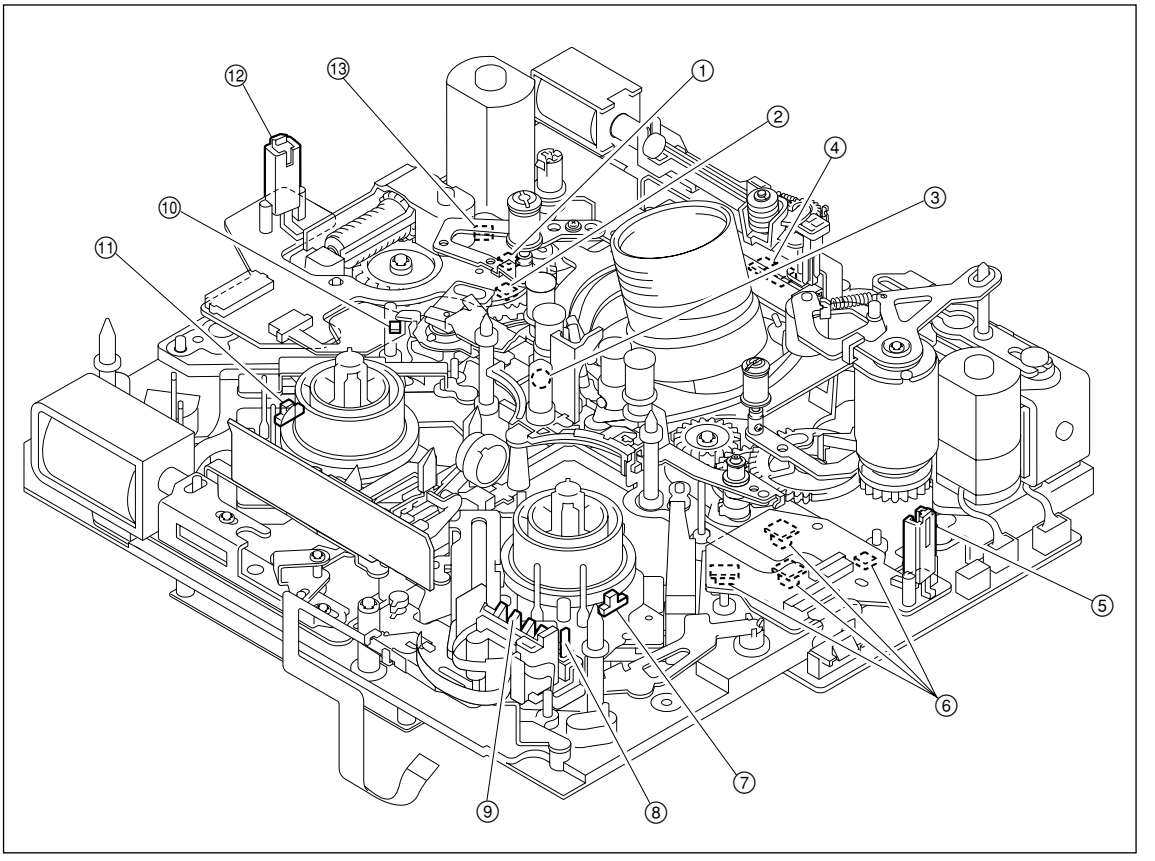
## 3-1-2. Location of Main Mechanical Parts




① Head cleaning solenoid
② Loading motor
③ TG1 arm assembly
④ Shuttle (left) assembly
⑤ S tension regulator assembly
⑥ S reel motor
⑦ S brake assembly
⑧ Brake solenoid
⑨ M stop solenoid assembly
⑩ T brake assembly
⑪ MIC assembly
⑫ MIC holder assembly
⑬ T reel motor
⑭ Shuttle (right) assembly
⑮ T drawer arm assembly
⑯ TG8 arm assembly
⑰ Capstan motor
⑱ Elevator cam
⑲ Pinch solenoid assembly
⑳ Reel shift motor
㉑ Pinch roller
㉒ HC roller assembly
㉓ Drum assembly
㉔ Rail assembly
㉕ Cassette compartment motor assembly

## 3-1-3. Location of Sensors

### Sensor Location Diagram (1) ..... Mechanism Deck




①, ② Mode sensor
Detects the mechanism position during threading.

③ Tape top/end detect LED
Detects the top and end of a tape.

④ Condensation sensor
Detects condensation occurred in DSR-1800/P/1600/P.

⑤ Tape top sensor
Detects the beginning of a tape that runs in the REV direction.

⑥ Reel position sensors (4 pieces) (Mini, M, Standard reel position)
Detects the reel table position at the each specified reel position according to the cassette type.

⑦ Reel FG sensor (Take-up side)
Detects rotation of the take-up reel table. The FG output of the sensor is sent to the servo circuit and used to control the rotating speed and torque of the reel motor.

⑧ Record proof sensor (common to standard, M and mini size cassettes)
Protects a tape from mis-recording.

⑨ Cassette memory terminal
Determines whether cassette memory is used, and reads and writes data to and from the cassette memory.

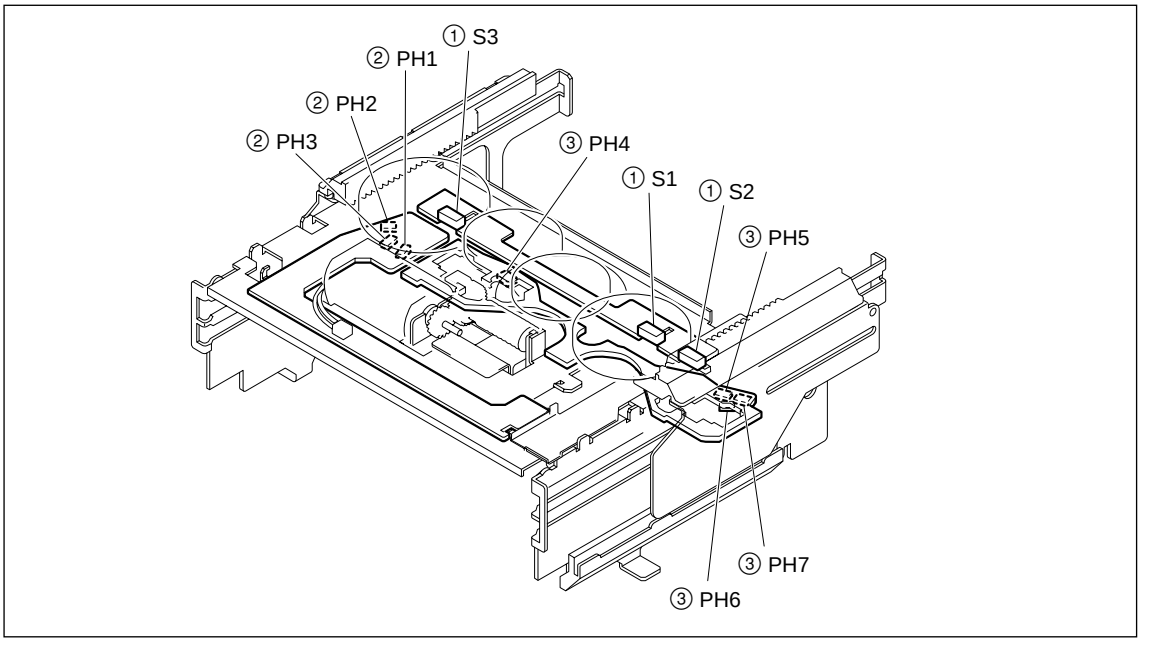
⑩ Tension sensor
The tension arm keeps the tension of a running tape constant during recording and playing. The tension sensor detects the mechanical position of the tension arm.

⑪ Reel FG sensor (Supply side)
Detects the rotation of the supply reel table. The PG output of the sensor is input to the servo circuit and controls the rotating speed and torque of the reel motor.

⑫ Tape end sensor
Detects the end of a tape that runs in the FWD direction.

⑬ Threading motor FG sensor
Detects the rotation speed of the gearbox motor. The FG output of the sensor is input to the servo circuit and controls the threading speed so that excessive force is not applied to the tape during threading.

### Sensor Location Diagram (2) ..... Cassette compartment



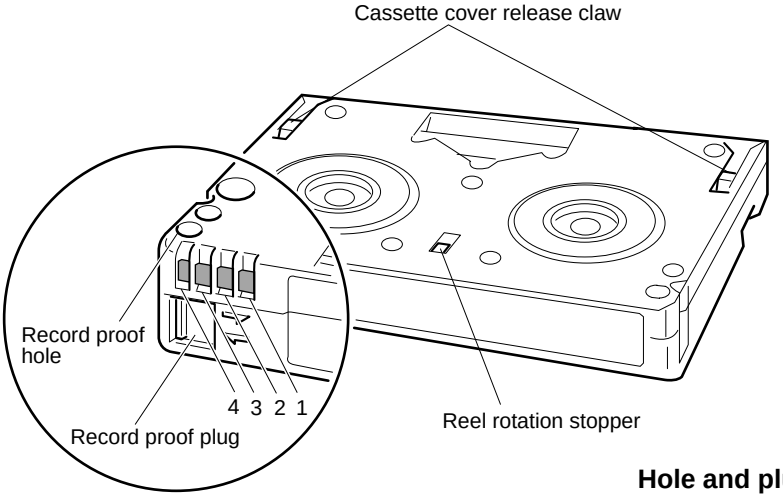

① The sensors S1, S2 and S3 discriminate the inserted cassette type among the mini, M, standard cassettes and the cassette adaptor for DVCPRO by on/off of the sensors.

② The sensors PH1, PH2 and PH3 detect the movement of a cassette compartment by their combination.

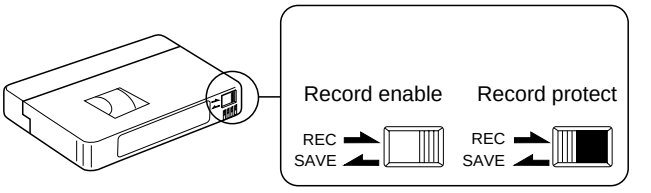
③ The sensors PH4 and PH5 detect that a mini cassette got inserted.
The sensors PH4 and PH6 detect that a M cassette got inserted.
The sensors PH4 and PH7 detect that a standard cassette got inserted.

# 3-2. Functions of Record Proof Hole and Record Proof Plug of Cassette

### Standard cassette, M cassette

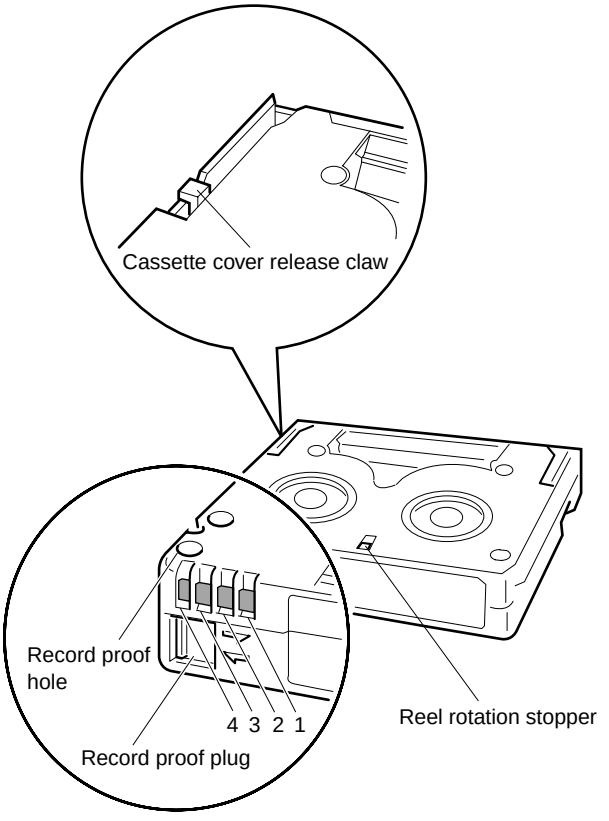



### Hole and plug for record proof




- This plug controls the record proof switch according to open or close position.

### Mini cassette

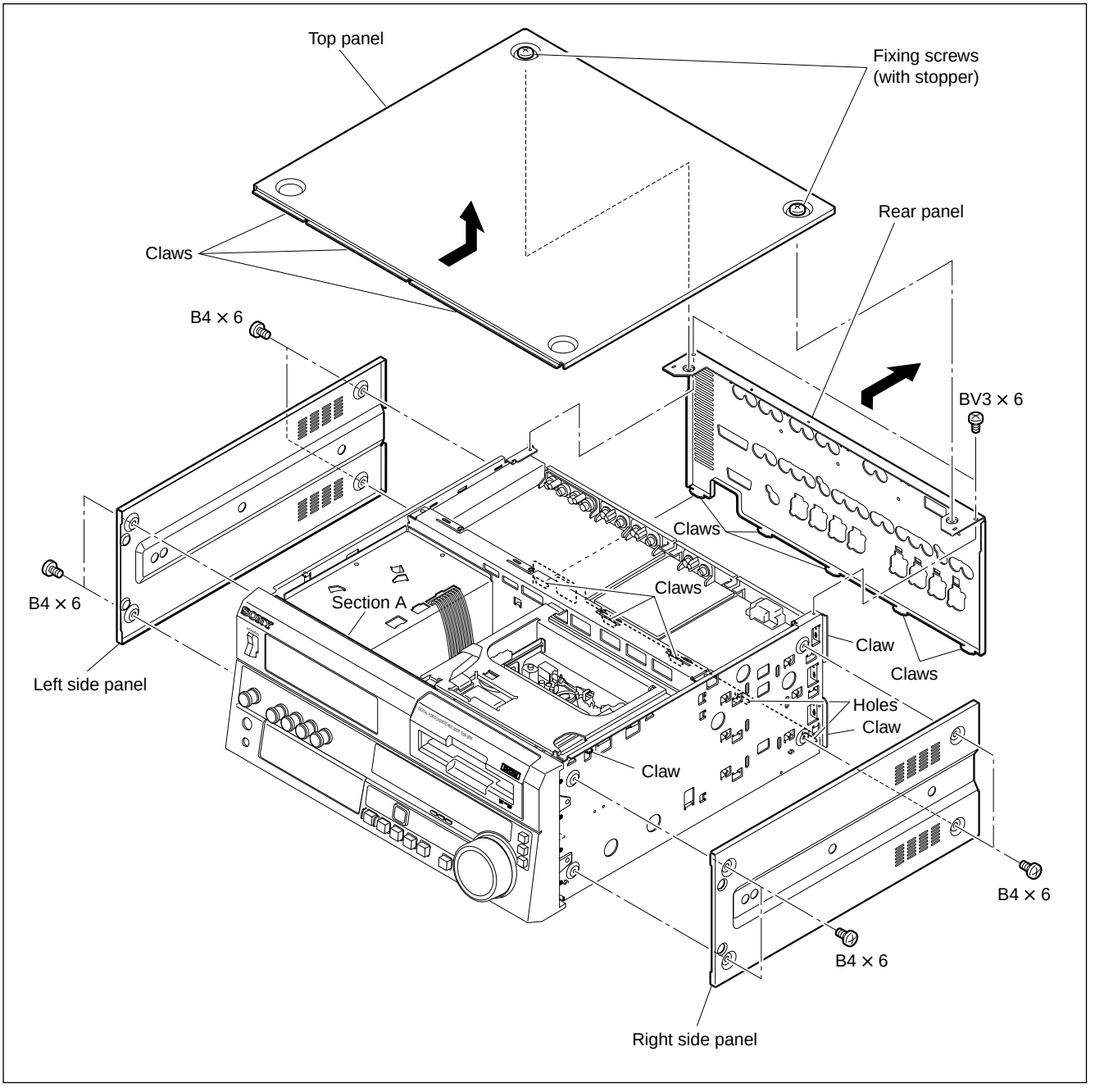



| Pin No. | Function | |
|---|---|---|
| | **Equipped with built-in memory** | **Not equipped with built-in memory** |
| 1 | +DC | Detecting tape thickness |
| 2 | DATA | Detecting tape type (Example: ME/MP) |
| 3 | CLOCK | Detecting tape application (Example: consumer/professional) |
| 4 | GND | – |

## 3-3. Removal/Installation of Cabinet

**Note**

Turn off the power of the unit before starting removal/installation.



## Removal/Reattachment of the Top Panel

(1) Loose the two screws and remove the top panel in the arrow direction.

**Note**

The screws do not come off the top panel, because of a stopper attached to the screw.
Do not forcibly remove the screws from the top panel.

(2) Insert the claw of the top panel in the section A shown in the figure, and tighten the two screws to reattach the top panel.

## Removal/Reattachment of the right and left side panels

**Reference**

A same procedure is performed when removing/reattaching the right and left side panels.

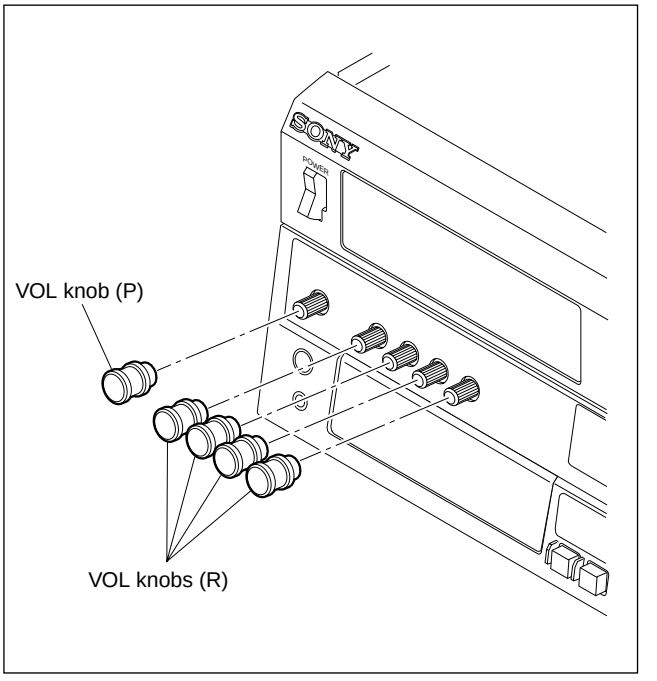
(1) Remove the four screws shown in the figure and remove the side panel.
(2) Hook the side panel at the three claws in the chassis, tighten the four screws (B4 × 8).

## Removal/Reattachment of the rear panel

(1) Remove the top panel.
(2) Remove the two screws (BV3 × 6).
(3) Pull up the rear panel, detach the two claws of the chassis, and remove the rear panel in the arrow direction.
(4) Detach the five claws of the rear panel from the holes of the chassis.
(5) Reattach the rear panel in the reverse order of steps (1) to (4).

## Removal/Reattachment of the front panel assembly

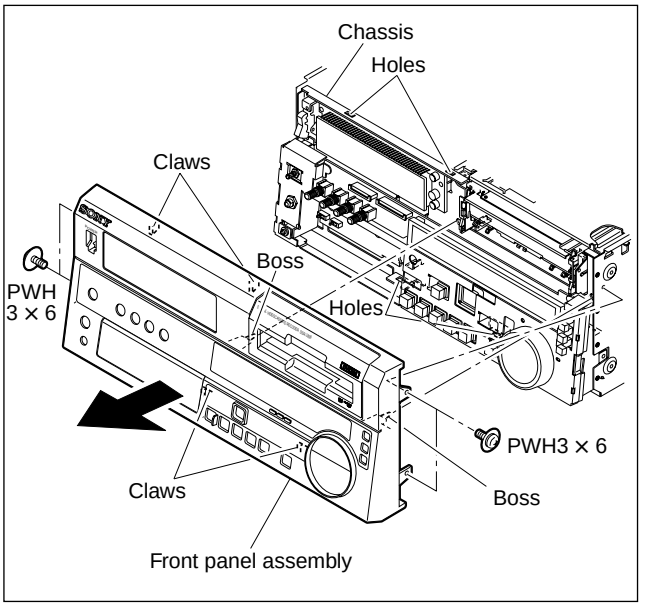
(1) Remove the five knobs.




(2) Remove the four screws (PWH3 × 6) securing the front panel assembly.
(3) Detach the four claws of the rear panel and remove the front panel assembly in the arrow direction.
(4) Fit the four claws of the front panel assembly to the holes of the chassis, insert the bosses into the holes, and secure with the four screws.
(5) Insert the five knobs to the base.

**Reference**

If the knob easily comes off, widen the slot on the volume shaft using a flat tip screwdriver.



## 3-4. Removal/Reattachment of the Cassette Compartment

### Removing

(1) Remove the top panel. (Refer to Section 3-3.)
(2) Disconnect the flexible card wire from the connector (CN1) of the CC-83 board.
(3) Remove the three screws and lift off the cassette compartment holding assembly in the arrow A direction.
(4) Remove the cassette compartment straight upwards.

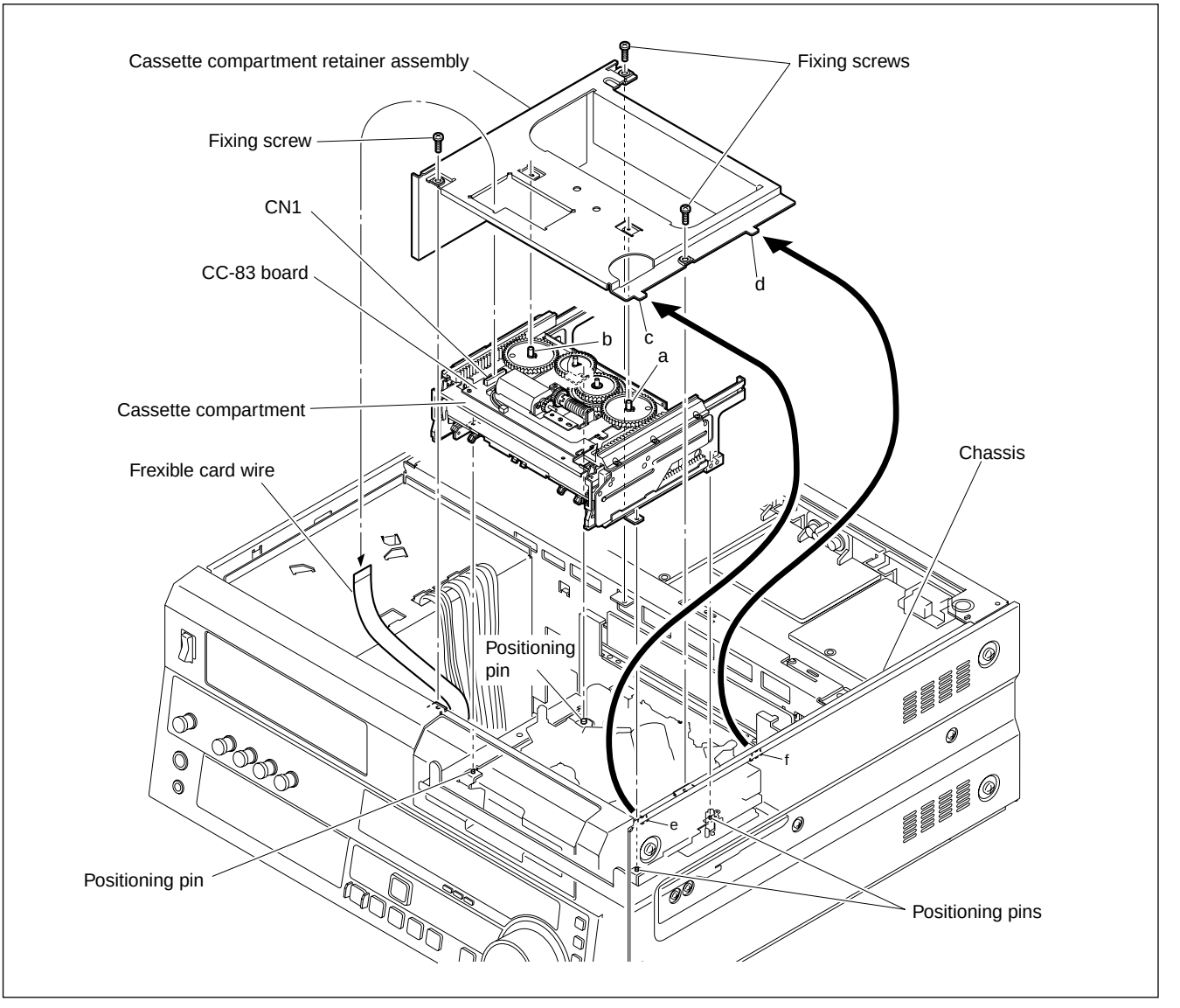
### Reattaching

(1) Insert the cassette compartment straight downwards, and align the three holes and notch to the four positioning pins of the chassis.

**Note**

Use care not to involve a lead wire of the reel shift motor when reattaching the cassette compartment.

(2) Insert the cassette compartment holder assembly in the reverse direction of the arrow, pass the holes and notch through the a and b axes of the cassette compartment, and secure with the three screws. At this same, align the c and d parts of the cassette compartment holder assembly to holes e and f of the chassis, and tighten with screws.
(3) Reconnect the flexible card wire to the connector (CN1) of the CC-83 board.
(4) Reattach the top panel. (Refer to Section 3-3.)



## 3-5. Removal/Reattachment of the Boards

**Note**

Be sure to remove the board after turning off the power.

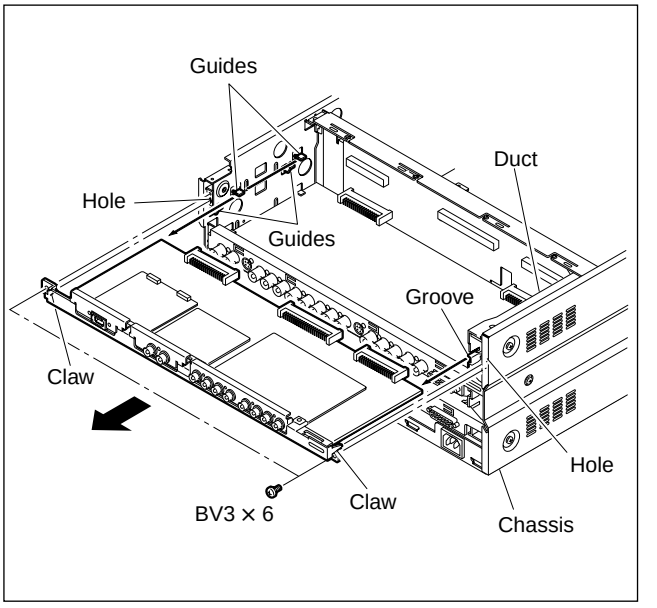
### 3-5-1. Removal/Reattachment of the Card Boards

(1) Remove the top panel and rear panel. (Refer to Section 3-3.)
(2) Remove the two screws (BV3 × 6) securing the card board.
(3) Remove the card board in the arrow direction.
(4) Reattach the card board in the reverse direction of the arrow while inserting the two claws of the card board into the holes of the chassis.

**Note**

Insert the board along the grooves of the duct and board guide rails until it connects firmly with the connector of the motherboard.

(5) Reattach the card board in the reverse order of steps (1) to (3).




### 3-5-2. Extension Board

An optional extension board is supplied to check and adjust the card boards. Attach the extension board to this unit and attach the board to be checked and adjusted to the top of the extension board.

| Extension board | Card boards which can be connected |
|---|---|
| DJ-498 | SSP-24 (DSR-1800/P),<br>IF-820 (DSR-1600/P),<br>VPR-71 (DSR-1800/P),<br>DPR-175 (DSR-1800/P),<br>SSP-23 (DSR-1600/P) |

## 3-5-3. Removal/Reattachment of the Boards

**Note**

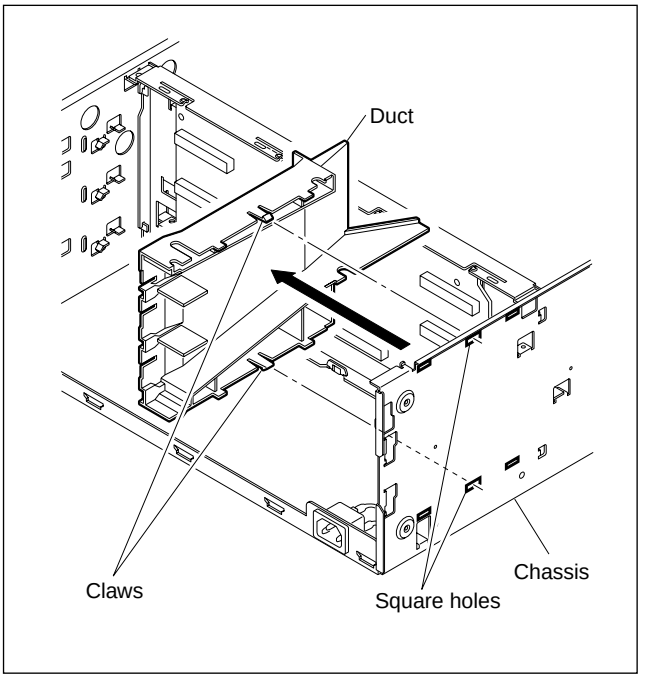
Turn off the power of the unit before removing.

### Tools

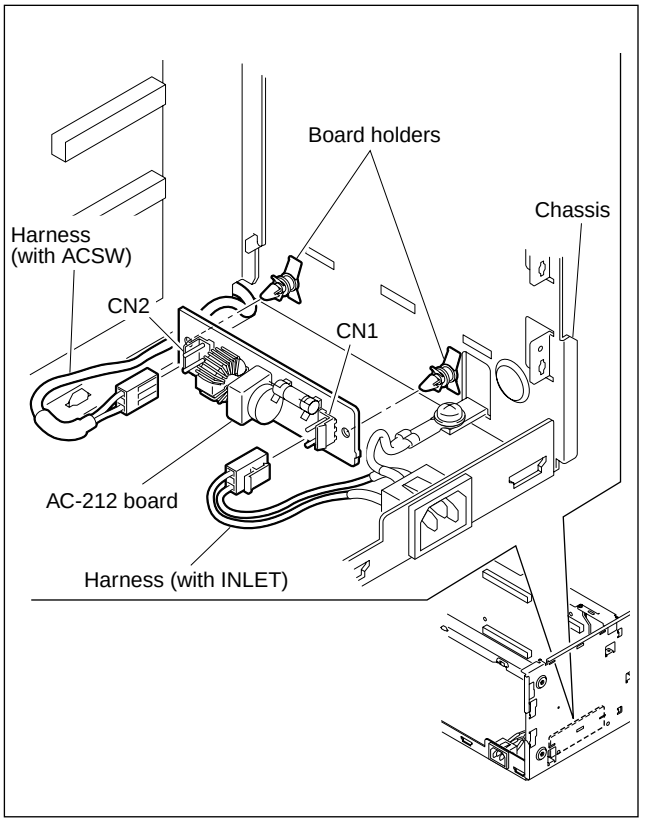
- Torque screwdriver's bit (for M3) : J-6325-110-A
- Torque screwdriver (3kg) : J-6325-400-A
- Locking compound : 7-432-114-11
- Tweezers

### Removal/Reattachment of the AC-212 board

(1) Remove the top panel and left side panel. (Refer to Section 3-3.)
(2) Remove the card board. (Refer to Section 3-5-1.)
(3) Pull out the claws of the duct from the square holes of the chassis, and remove the duct in the arrow direction.




(4) Disconnect the harness connector connected to the connectors (CN1, CN2) of the AC-212 board.
(5) Remove the AC-212 board from the board holder of the chassis.
(6) Reattach the AC-212 board in the reverse order of steps (1) to (5).



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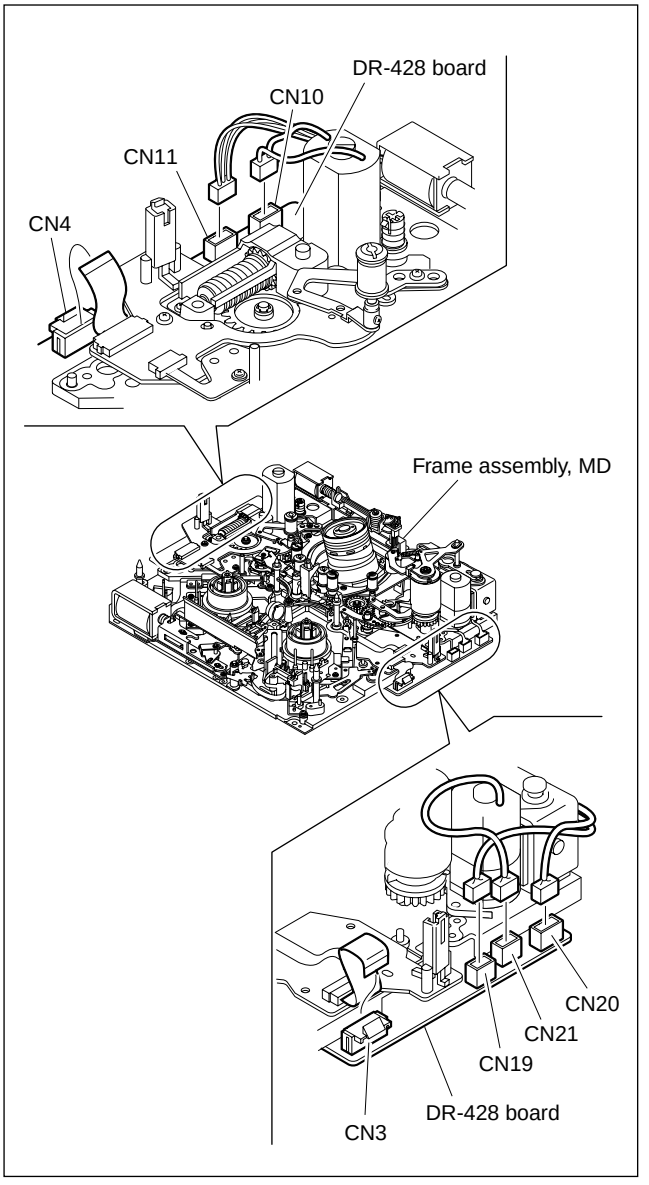
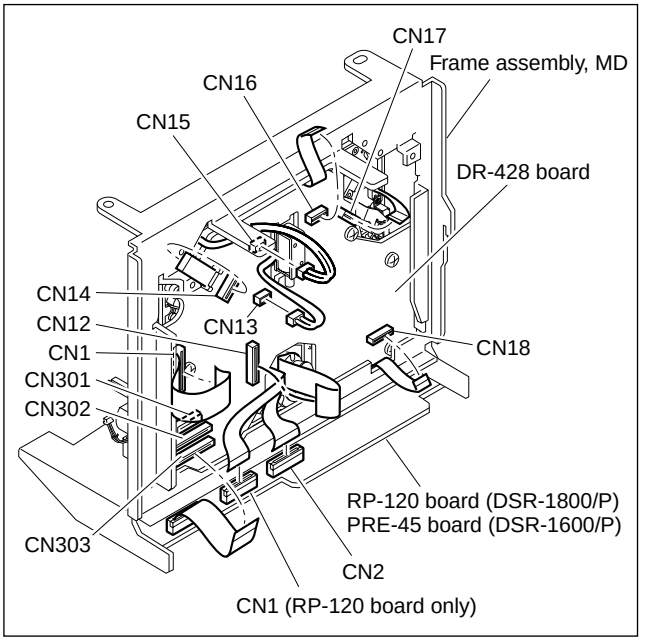
## Removal/Reattachment of the DR-428 board

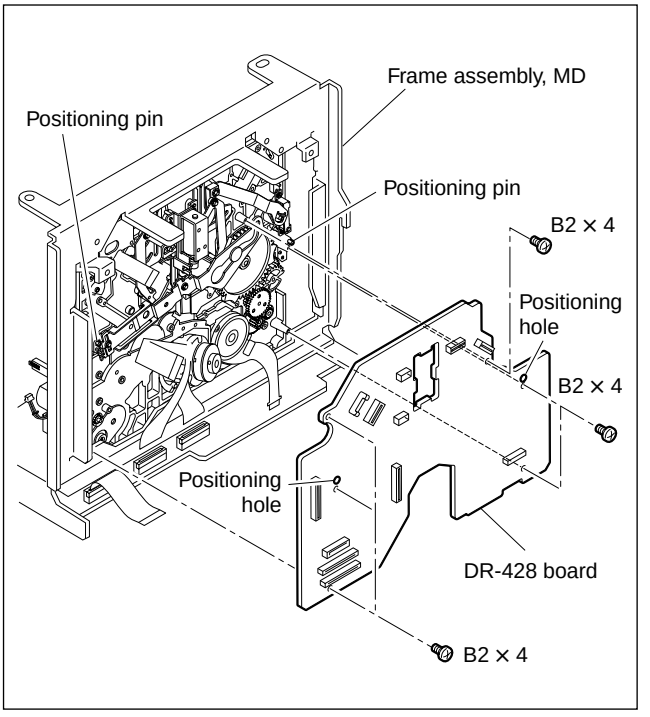
(1) Lay the MD frame assembly horizontally. (Refer to Section 3-9-1.)
(2) Disconnect the CN4, CN10, CN11, CN3, CN19, CN20 and CN21 connectors from the DR-428 board.




(3) Stand the MD frame assembly as shown below. (Refer to Section 3-9-2.)
(4) Disconnect the CN1 (RP-120 board only), CN12, CN13, CN14, CN15, CN16, CN17, CN18, CN301, CN302 and CN303 connectors from the DR-428 board.
(5) Disconnect the CN1 and CN2 connectors from the RP-120 board (DSR-1800) or PRE-45 board (DSR-1600).

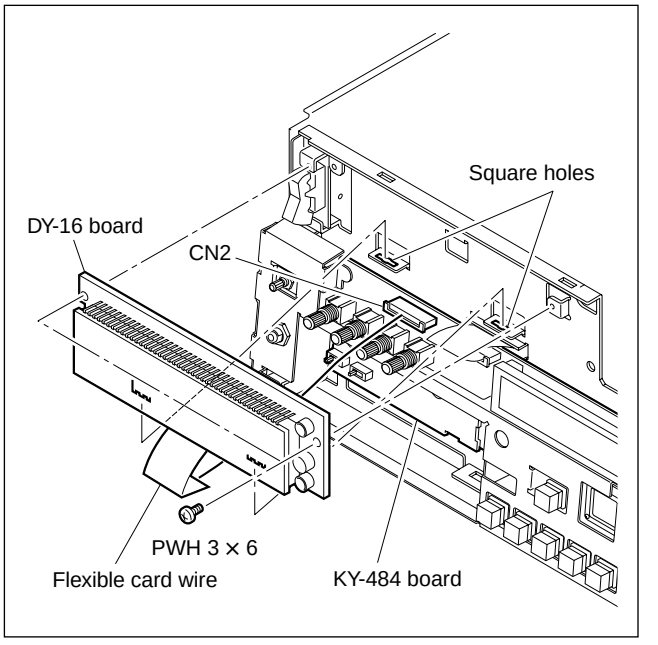


(6) Remove the DR-428 board by removing the six screws (B2 × 4).
(7) Fit the two positioning pins in the two positioning holes of the DR-428 board and then fix the DR-428 board with the six screws.
(8) Reattach the DR-428 board in the reverse order of removing steps (1) to (7).



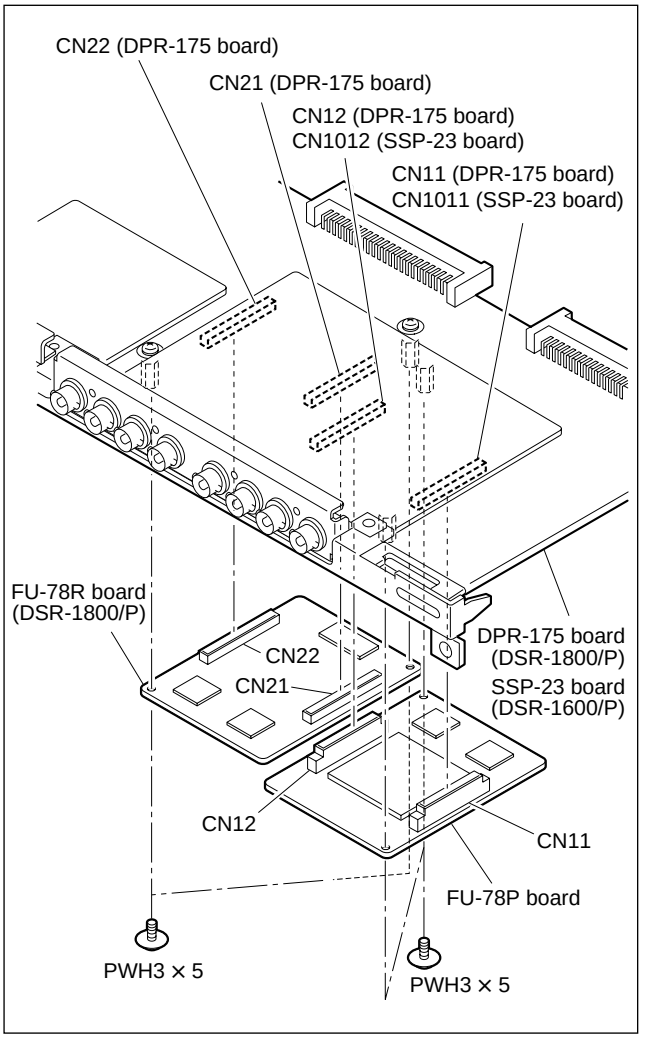

## Removal/Reattachment of the DY-16 board

(1) Remove the front panel. (Refer to Section 3-3.)
(2) Disconnect the flexible card wire from the connector (CN2) of the DY-16 board,.
(3) Remove the two screws (PWH3 × 6) and remove the DY-16 board upward.
(4) Insert the two protrusions of the DY-16 board in the two square holes in the chassis and fix them with the two screws.
(5) Reconnect the flexible card wire disconnected in Step (2).
(6) Reattach the front panel.



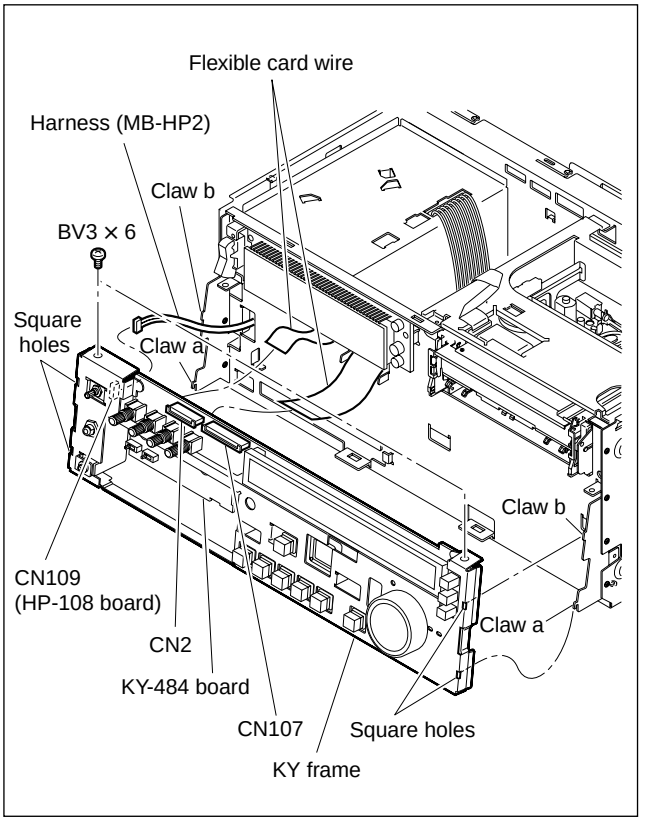
## Removal/Reattachment of the FU-78P board/ 78R board (DSR-1800/P)

(1) Remove the DPR-175 board (DSR-1800/P)/SSP-23 board (DSR-1600/P). (Refer to Section 3-5-1.)
(2) Remove the two screws (PWH3 × 5) securing the FU-78P or FU-78R board, and remove the FU-78P or 78R board.
(3) To connect the FU-78P board, connect the connectors (CN11, CN12) and connectors (CN11, CN12) of the DPR-175 board/connectors (CN1011, CN1012) of the SSP-23 board, and secure with the two screws.
(4) To connect the FU-78R board, connect the connectors (CN21, CN22) and connectors (CN21, CN22) of the DPR-175 board, and secure with the two screws.




## Removal/Reattachment of the HP-108 board

(1) Remove the front panel assembly. (Refer to Section 3-3.)
(2) Remove the two screws (BV3 × 6) securing the KY frame.
(3) Pull out the claws on the unit from the square holes of the KY frame in the order of b and a, and remove the KY frame.
(4) Disconnect the harness connector connected to the connector (CN109) of the HP-108 board.
(5) Disconnect the flexible card wires connected to the connectors (CN107, CN2) of the KY-484 board.
(6) Remove the KY frame in the arrow direction.

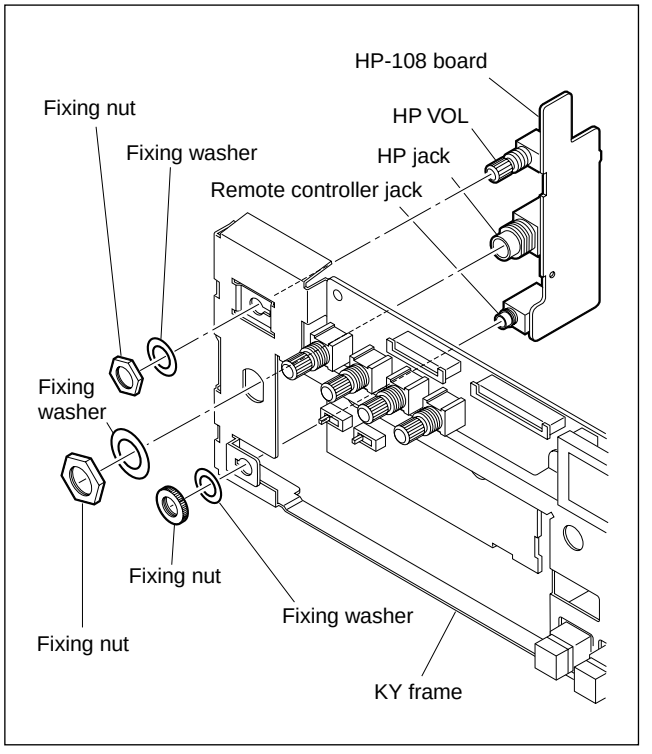


(7) Remove the nuts securing the HP VOL, HP jacks of the HP-108 and remote controller jack, and remove the HP-108 board.

**Note**

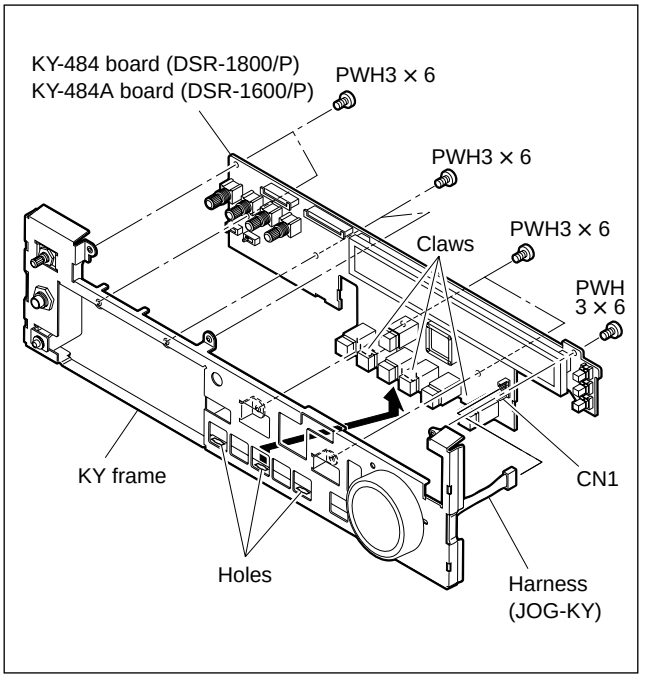
Support the HP-108 board from the rear side when removing the nuts.

(8) Reattach the HP-108 board in the reverse order of the removing steps (1) to (7).




### Removal/Reattachment of the KY-484 board (DSR-1800/P)/484A board (DSR-1600/P)

(1) Remove the KY frame. (Refer to steps (1) to (6) of Removal/Reattachment of the HP-108 Board in this section.)
(2) Remove the seven screws securing the KY-484/484A board.
(3) Pull out the claws of the KY-484/484A board from the holes of the KY frame, and remove the KY-484/484A board from the arrow direction.
(4) Disconnect the harness connector connected to the connector (CN1) of the KY-484/484A board.
(5) Reattach the KY-484/484A board in the reverse order of steps (1) to (4).



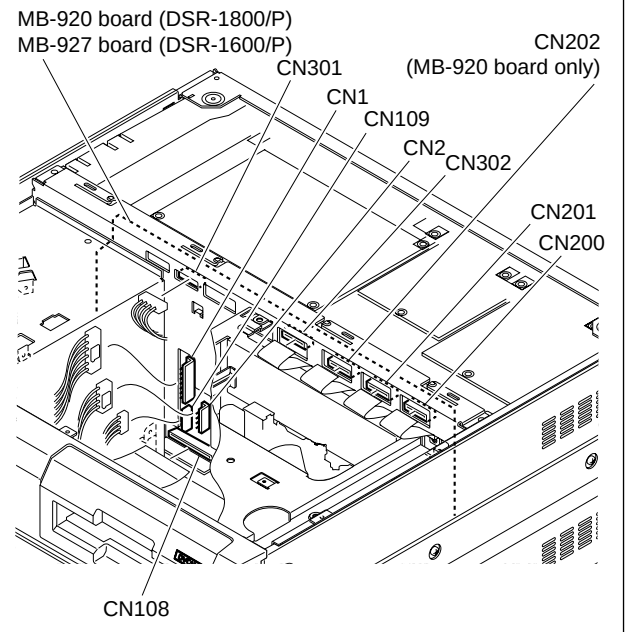
### Removal/Reattachment of the MB-920 board (DSR-1800/P)/927 board (DSR-1600/P)

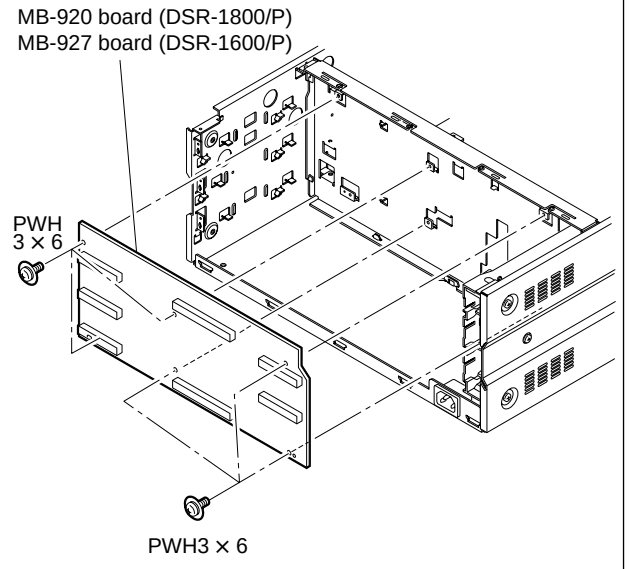
(1) Remove all the card boards. (Refer to Section 3-5-1.)
(2) Disconnect the connectors (CN1, CN2, CN108, CN109, CN200, CN201, CN202) (MB-920 board only), CN301, and CN302) of the MB-920/927 board.

**Note**

Use care not to bend the connector pins.

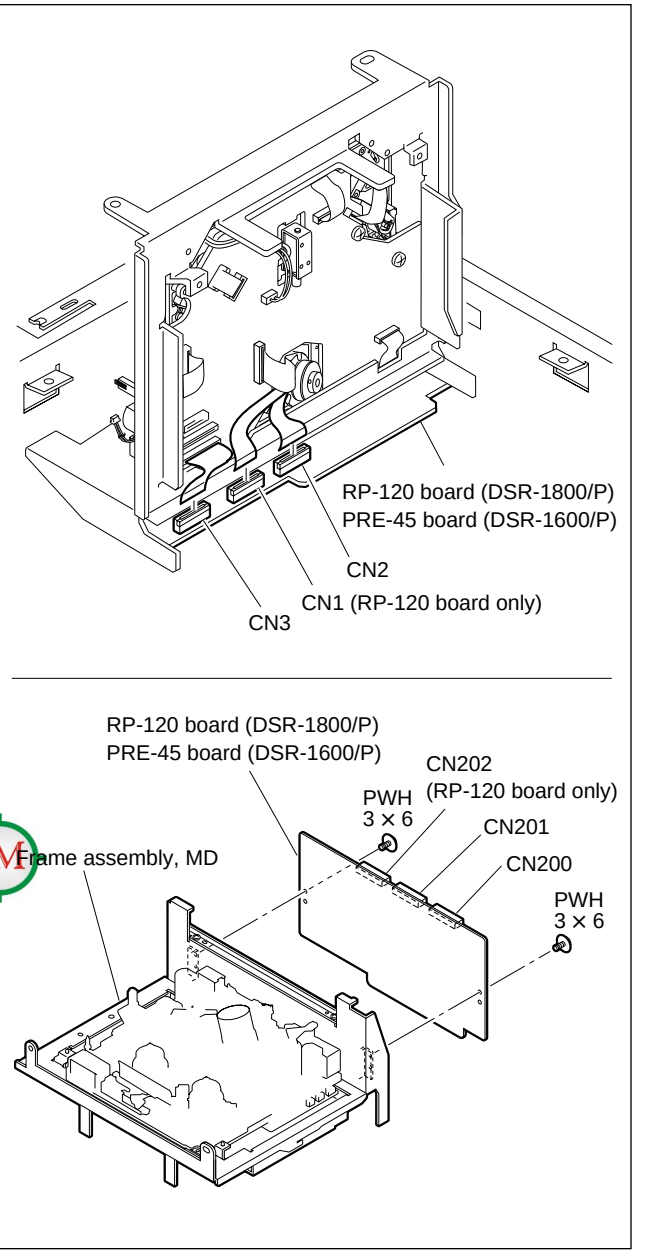
(3) Remove the six screws (PWH3 × 6) securing the MB-920/927 board, and remove the MB-920/927 board in the arrow direction.
(4) Reattach the MB-920/927 board in the reverse order of steps (1) to (3).



## Removal/Reattachment of the RP-120 board (DSR-1800/P)/PRE-45 board (DSR-1600/P)

(1) Set the frame assembly, MD in the vertical position. (Refer to Section 3-9-2.)
(2) Disconnect the connectors (CN1 (RP-120 board only), CN2, CN3) of the RP-120 board/PRE-45 board.
(3) Set the frame assembly, MD in the horizontal position. (Refer to Section 3-9-1.)
(4) Disconnect the connectors (CN200, CN201, CN202 (RP-120 board only)) of the RP-120 board/PRE-45 board.
(5) Remove the two screws (PWH3 × 6) securing the RP-120 board/PRE-45 board, and remove the RP-120 board/PRE-45 board.
(6) Reattach the RP-120 board/PRE-45 board in the reverse order of steps (1) to (5).



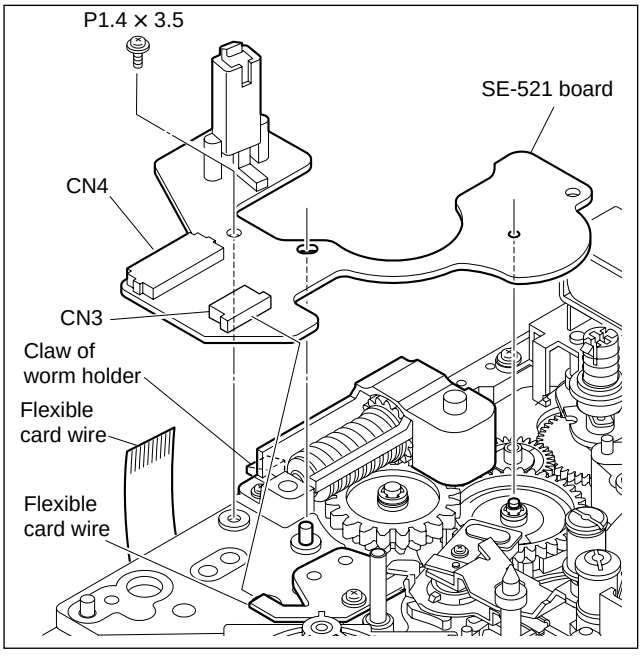
## Removal/Reattachment of the SE-521 board

(1) Remove the top panel. (Refer to Section 3-3.)
(2) Remove the cassette compartment.
(Refer to Section 3-4.)
(3) Remove the TG1 arm assembly. (Ref to Section 7-13.)
(4) Remove the loading motor assembly.
(Refer to Section 7-18.)
(5) Disconnect the flexible card wire from the connector (CN3) of the SE-521 board.
(6) Disconnect the flexible card wire from the connector (CN4) of the SE-521 board.
(7) Remove the screw to remove the SE-521 board.
(8) Fit the hole and the slotted hole of the SE-521 board on the two shafts of the MD chassis and fix it with the screw.
Tightening Torque : 0.1 N•m {1 kgf•cm}

**Note**

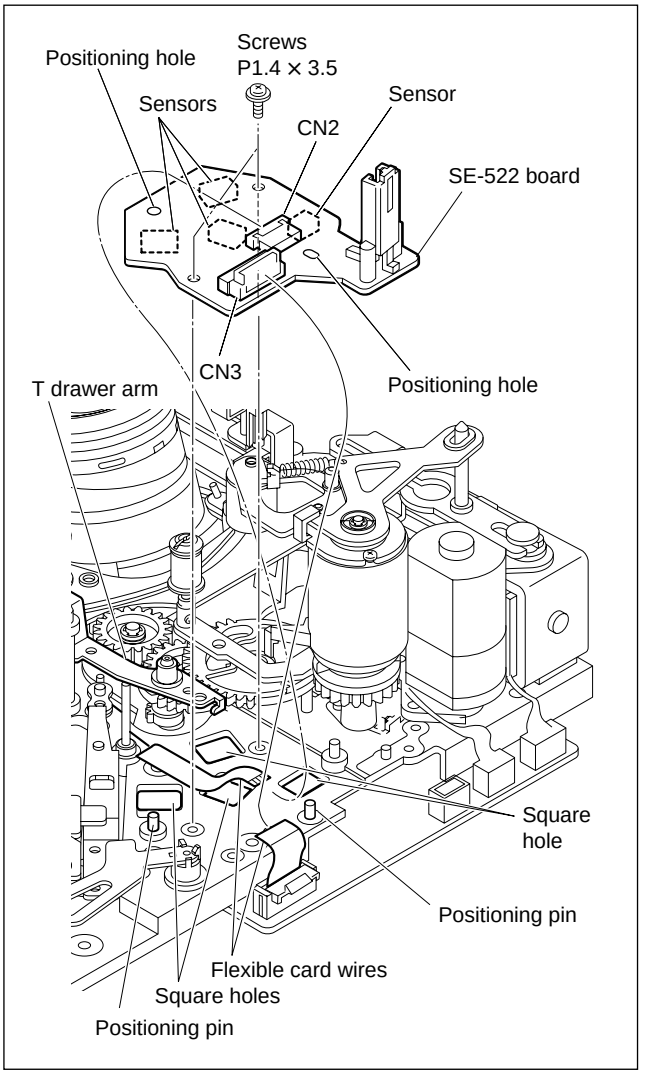
Use care not to pinch the tip of the flexible card wire of the S tension regulator assembly between the SE-521 board and the chassis.
Place the SE-521 board under the claw of the worm holder.

(9) Reconnect the flexible card wire to the connector (CN4) of the SE-521 board.
(10) Reconnect the flexible card wire of the S tension regulator assembly to the connector (CN3) of the SE-521 board.
(11) Reinstall the loading motor assembly.
(Refer to Section 7-18.)
(12) Reattach the TG1 arm assembly. (Refer to Section 7-13.)



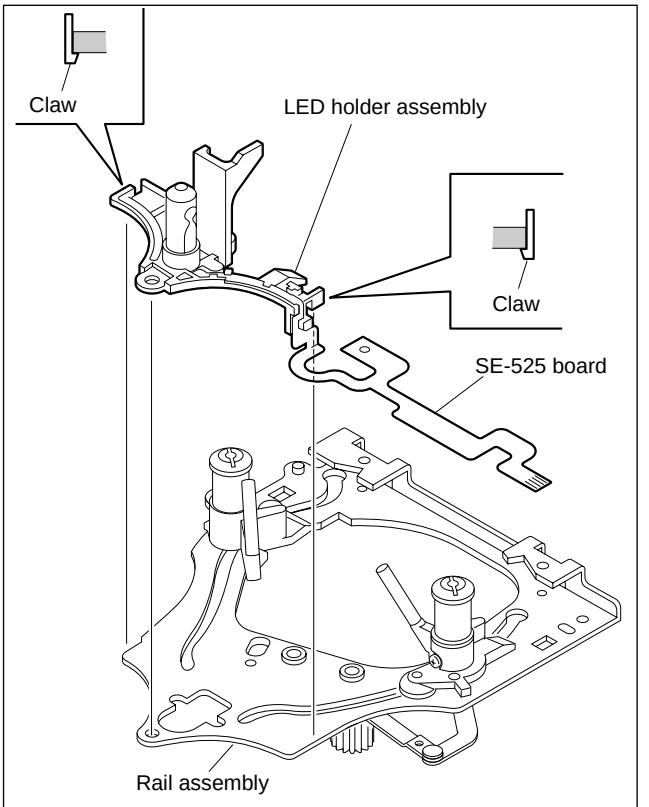

## Removal/Reattachment of the SE-522 board

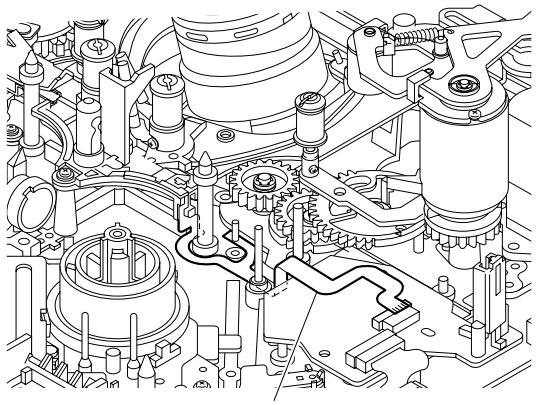
(1) Remove the top panel. (Refer to Section 3-3.)
(2) Remove the cassette compartment.
(Refer to Section 3-4.)
(3) Disconnect the two flexible cable wires from the connectors (CN2, CN3) of the SE-522 board.
(4) Remove the two screws (P1.4 × 3.5) and remove the SE-522 board avoiding any contacts to the T drawer arm assembly.
(5) Fit the two positioning holes of the SE-522 board on the positioning pins of the MD chassis, and insert the sensors (PH1, PH2, and PH3) of the SE-522 board in the square holes in the MD chassis.
(6) Reattach the SE-522 board in the reverse order of the removing steps (1) to (5).
Tightening Torque : 0.1 N•m {1 kgf•cm}



## Removal/Reattachment of the SE-525 board (LED holder assembly)

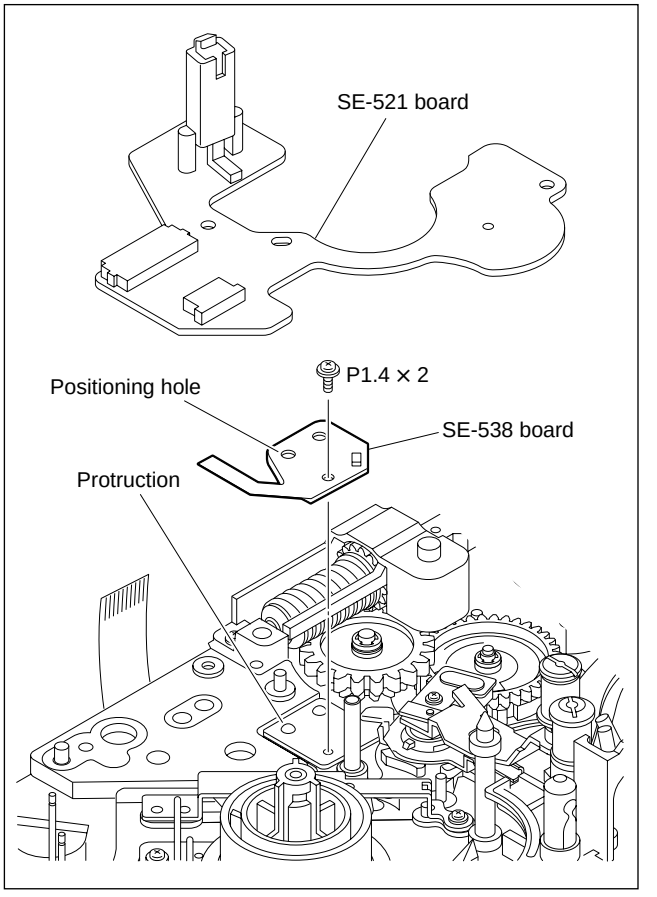
(1) Remove the top panel. (Refer to Section 3-3.)
(2) Remove the cassette compartment.
(Refer to Section 3-4.)
(3) Remove the RMP (T1) holding assembly.
(Refer to Section 7-8.)
(4) Remove the rail assembly. (Refer to Section 7-15.)
(5) Remove the LED holder assembly from the rail assembly.
(6) Reattach the LED holder assembly to the rail assembly.
(7) Reattach the SE-525 board in the reverse order of the removing steps (1) to (4).
Tightening Torque : 0.1 N•m {1 kgf•cm}




## Removal/Reattachment of the SE-538 board

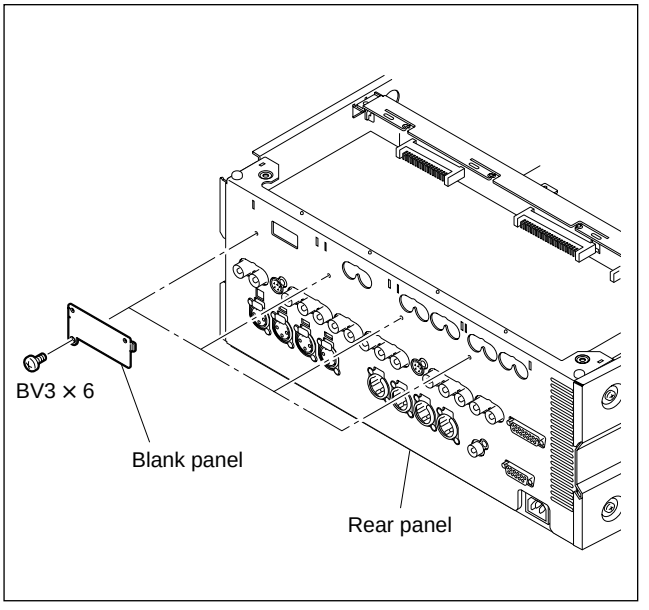
(1) Remove the SE-521 board. (Refer to this section Removal/Reattachment of the SE-521board.)
(2) Remove the screw to remove the SE-538 board.
(3) Reattach the SE-538 board in the reverse order of the removing steps (1) and (2).
Tightening Torque : 0.1 N•m {1 kgf•cm}



## 3-5-4. Removal/Reattachment of the Option Boards

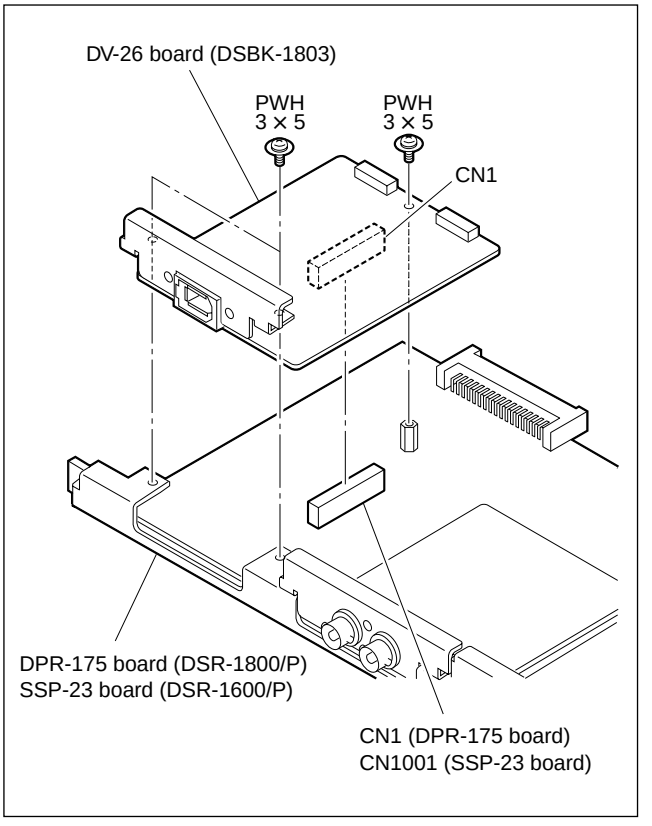
**Notes**

- When removing, be sure to turn off the power first.
- When attaching a new board, remove the screw (BV3 × 6), and remove the blank panel.



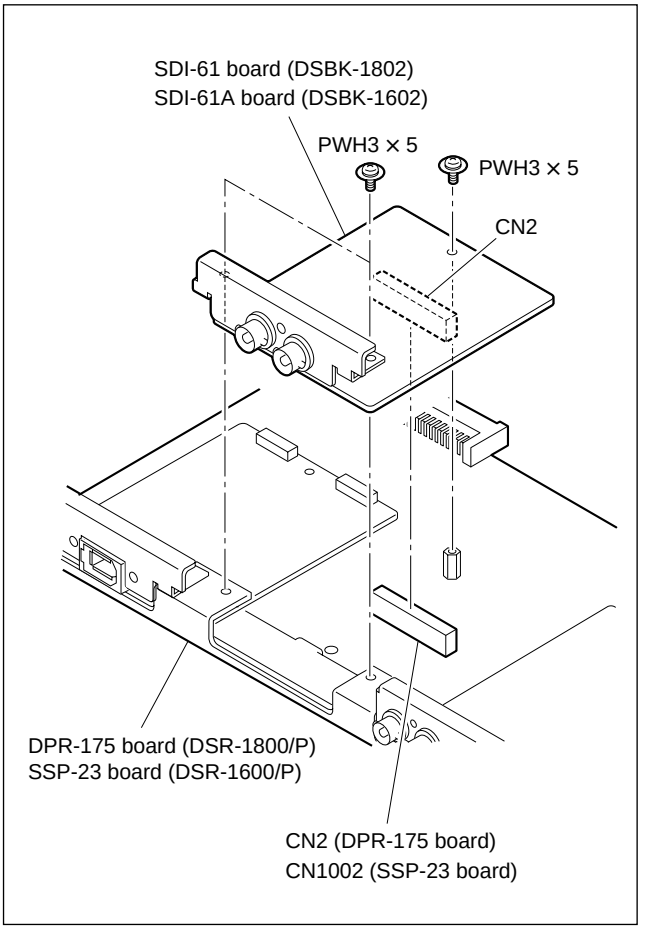

### Removal/Reattachment of the DV-26 (DSBK-1803) board

(1) Remove the DPR-175 board (DSR-1800/P)/SSP-23 board (DSR-1600/P). (Refer to Section 3-5-1.)
(2) Remove the three screws (PWH3 × 5) securing the DV-26 board.
(3) Remove the DV-26 board.
(4) Connect the connector (CN101) of the DV-26 board to the connector (CN1) of the DPR-175 board/connector (CN1001) of the SSP-23 board, and attach with the three screws.
(5) Reattach the DV-26 board in the reverse order of steps (1) to (3).



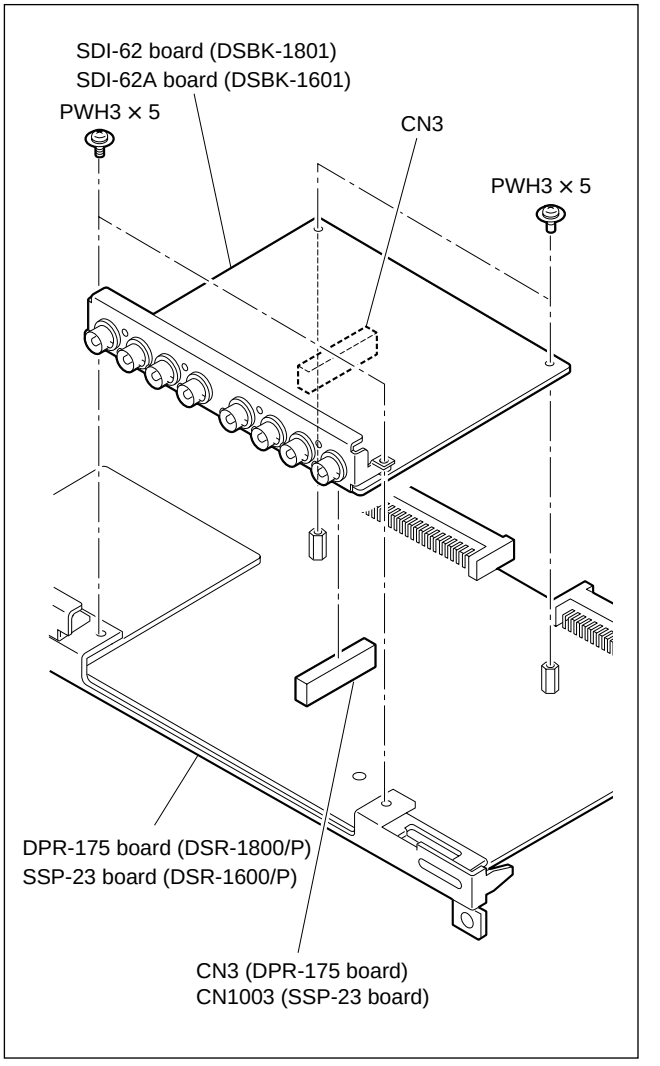
### Removal/Reattachment SDI-61 board (DSBK-1802)/61A board (DSBK-1602)

(1) Remove the DPR-175 board (DSR-1800/P)/SSP-23 board (DSR-1600/P). (Refer to Section 3-5-1.)
(2) Remove the three screws (PWH3 × 5) securing the SDI-61/61A board.
(3) Remove the SDI-61/61A board.
(4) Connect the connector (CN2) of the SDI-61/61A board to the connector (CN2) of the DPR-175 board/connector (CN1002) of the SSP-23 board, and attach with the three screws.
(5) Reattach the SDI-61/61A board in the reverse order of steps (1) to (3).




### Removal/Reattachment SDI-62 board (DSBK-1801)/62A board (DSBK-1601)

(1) Remove the DPR-175 board (DSR-1800/P)/SSP-23 board (DSR-1600/P). (Refer to Section 3-5-1.)
(2) Remove the four screws (PWH3 × 5) securing the SDI-62/62A board.
(3) Remove the SDI-62/62A board.
(4) Connect the connector (CN3) of the SDI-62/62A board to the connector (CN3) of the DPR-175 board/connector (CN1003) of the SSP-23 board, and attach with the four screws.
(5) Reattach the SDI-62/62A board in the reverse order of steps (1) to (3).



http://getMANUAL.com



# 3-6. Notes on Repair Parts

## 3-6-1. Flexible Card Wire Replacement

The following six types of flexible card wire are used in the DSR-1800/P/1600/P.

**Note**

Take utmost care when handling the flexible card wires because their life is extremely shortened by folding.

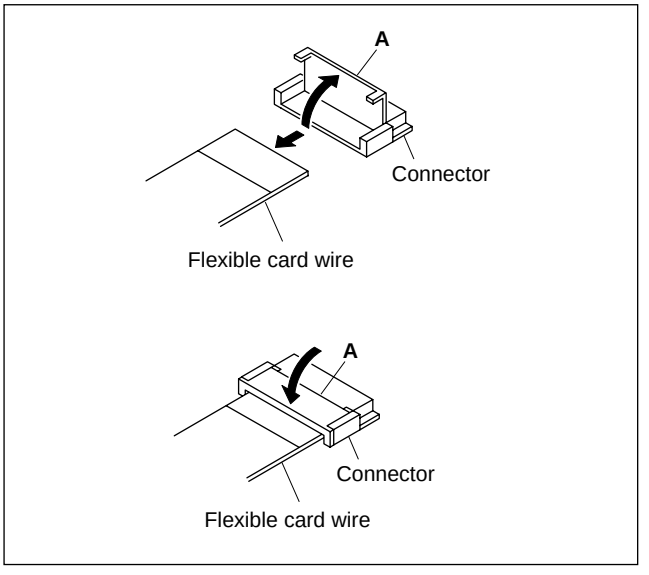
**< Type A >**

**Removing method**

Raise the portion marked "**A**" of the connector and release the lock. Pull out the flexible card wire.

**Insertion method**

Insert the flexible card wire fully up to the marked line and push up the portion marked "**A**" of the connector.




**Note**

The flexible card wire has the conduction side and the insulation side. Connect the flexible card wire after checking for the correct side as shown.
If the condition side and the insulation side are connected in the wrong direction, the circuit will not operate.

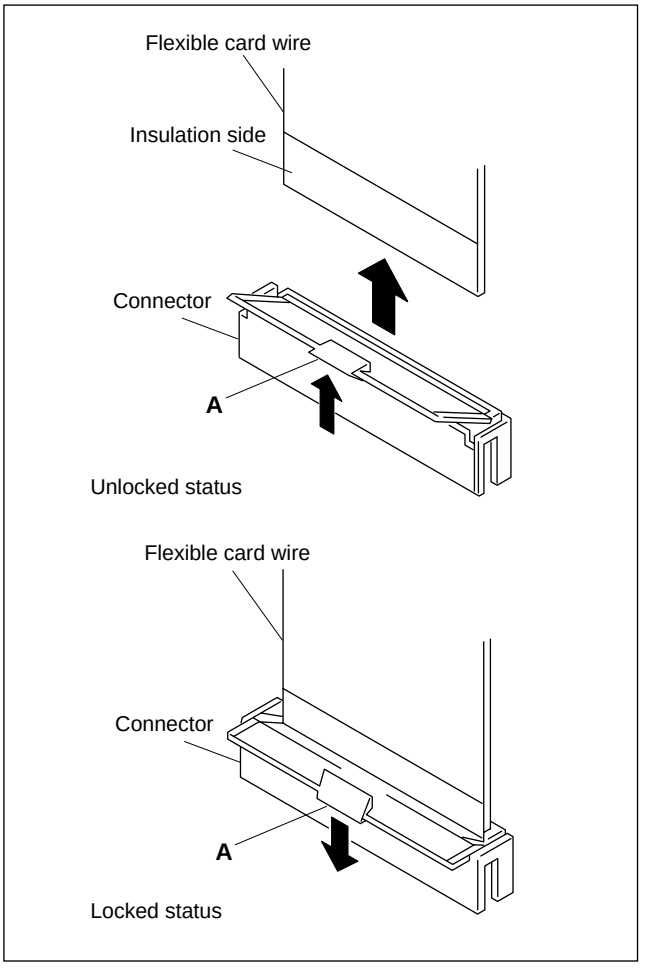
**< Type B >**

**Removing method**

Raise the portion marked "**A**" of the connector and release the lock. Pull out the flexible card wire.

**Insertion method**

Insert the flexible card wire fully up to the marked line and push up the portion marked "**A**" of the connector.




**Note**

The flexible card wire has the conduction side and the insulation side. Connect the flexible card wire after checking for the correct side as shown.
If the condition side and the insulation side are connected in the wrong direction, the circuit will not operate.

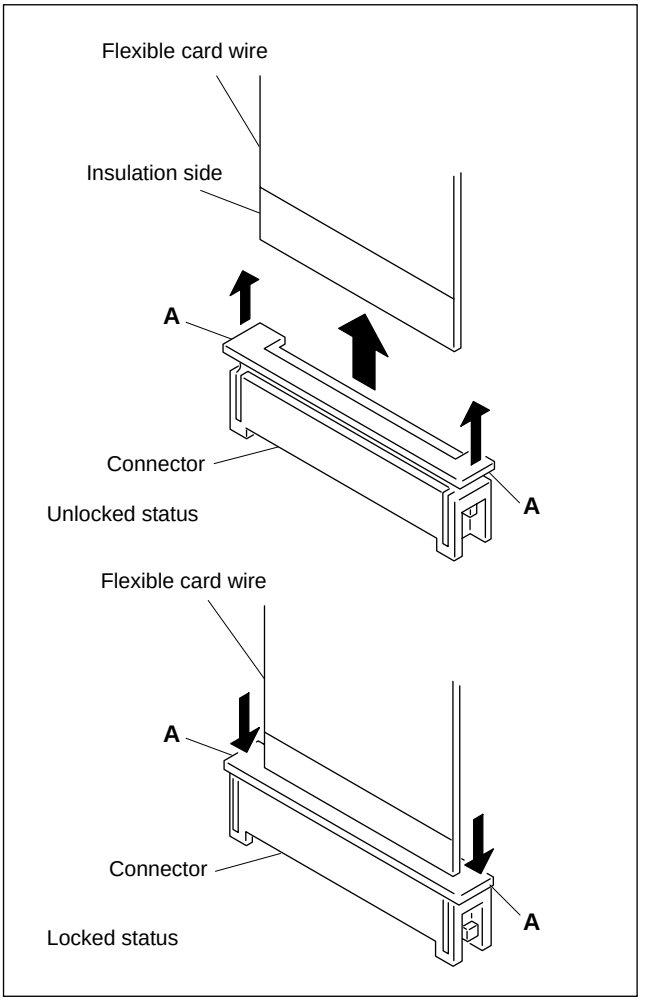
**< Type C >**

### Removing method

Raise the portion marked "**A**" of the connector and release the lock. Pull out the flexible card wire.

### Insertion method

Insert the flexible card wire fully up to the marked line and push up the portion marked "**A**" of the connector.




**Note**

The flexible card wire has the conduction side and the insulation side. Connect the flexible card wire after checking for the correct side as shown.
If the condition side and the insulation side are connected in the wrong direction, the circuit will not operate.

**< Type D >**

### Removing method

**Notes**

- Do not pull the flexible card wire before releasing the lock.
- The flexible card wire has the conduction side and the insulation side. Check the conduction side and the insulation side before disconnection.

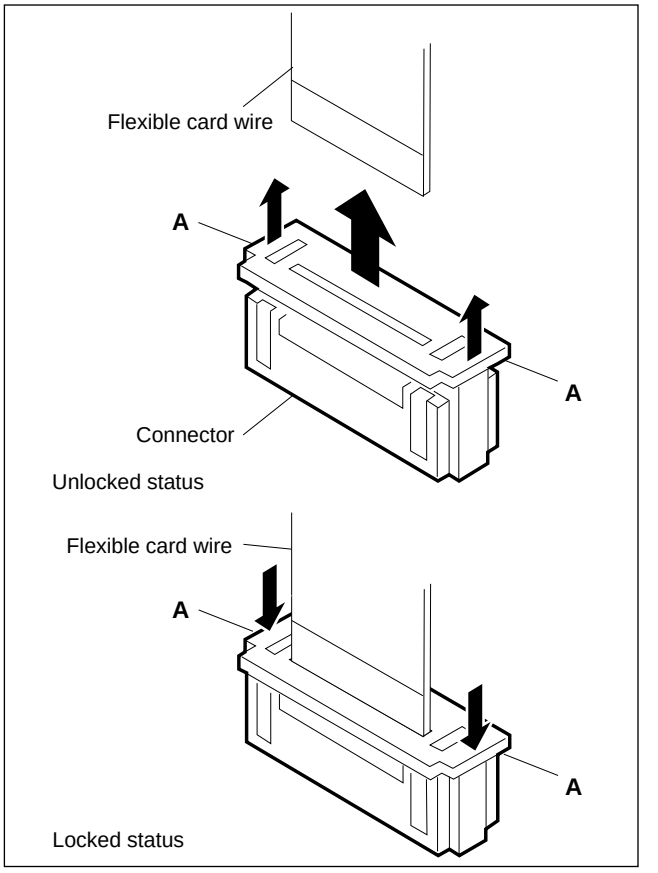
1. Move the portion "**A**" of the connector in the direction of the arrow A to release the lock. Remove the flexible card wire.

### Insertion method

**Notes**

- Confirm that the contacting surface of the flexible card wire is free from stain and dust.
- Confirm that the lock of the connector is already released.

1. Insert the flexible card wire securely to the deep end.
2. Push in the portion marked "**A**" of the connector in the direction of the arrow to lock the connector. Be careful that the flexible card wire is not slanted with respect to the connector.



**< Type E >**

### Removing method

**Notes**

- Do not pull the flexible card wire before releasing the lock.
- The flexible card wire has the conduction side and the insulation side. Check the conduction side and the insulation side before disconnection.

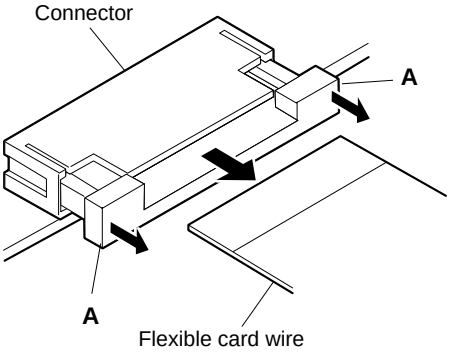
1. Move the portion "**A**" of the connector in the direction of the arrow A to release the lock. Remove the flexible card wire.

### Insertion method

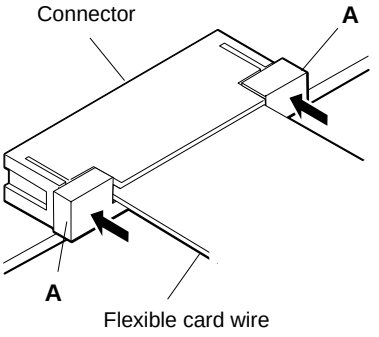
**Notes**

- Confirm that the contacting surface of the flexible card wire is free from stain and dust.
- Confirm that the lock of the connector is already released.

1. Insert the flexible card wire securely to the deep end.
2. Push in the portion marked "**A**" of the connector in the direction of the arrow to lock the connector. Be careful that the flexible card wire is not slanted with respect to the connector.




Unlocked status




Locked status

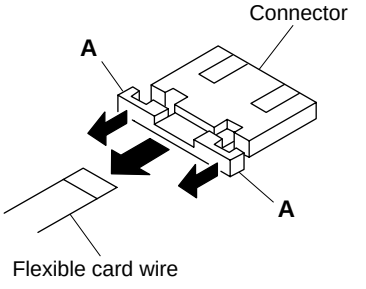
**< Type F >**

### Removing method

**Notes**

- Do not pull the flexible card wire before releasing the lock.
- The flexible card wire has the conduction side and the insulation side. Check the conduction side and the insulation side before disconnection.

1. Move the portion "**A**" of the connector in the direction of the arrow A to release the lock. Remove the flexible card wire.



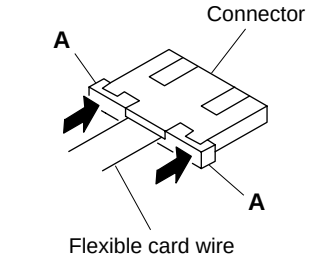

Unlocked status

### Insertion method

**Notes**

- Confirm that the contacting surface of the flexible card wire is free from stain and dust.
- Confirm that the lock of the connector is already released.

1. Insert the flexible card wire securely to the deep end.
2. Push in the portion marked "**A**" of the connector in the direction of the arrow to lock the connector. Be careful that the flexible card wire is not slanted with respect to the connector.

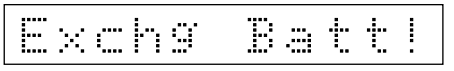



Locked status

## 3-7. Replacement of Lithium Battery

The SSP-24 board (DSR-1800/P) or SSP-23 board (DSR-1600/P) board has the built-in lithium battery as the countermeasure for power failure. The lithium battery is attached on top of IC600 (H2). Life of the lithium battery is about six years.
Time to exchange the battery is displayed in the time counter display block and on the monitor display. Replace the battery when the following message appears.

### Time counter display block



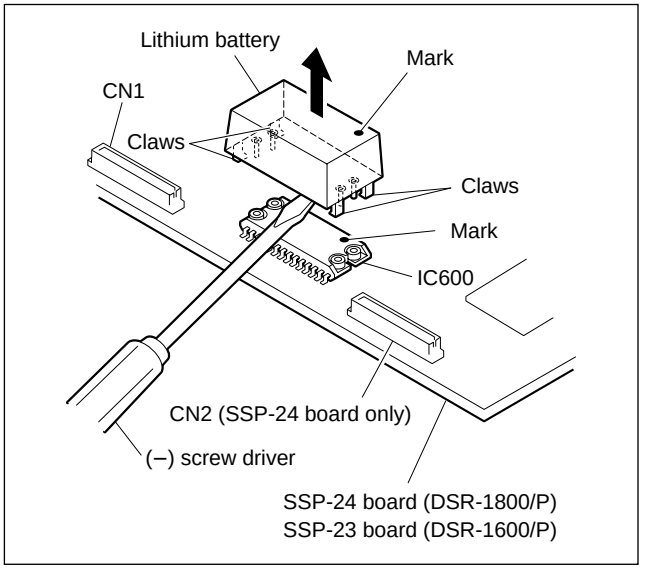

Sony part number : 1-528-749-11
Type : M4Z28BR00SH1

### Backup battery replacement procedure

**Note**

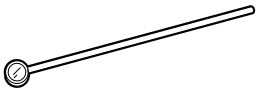
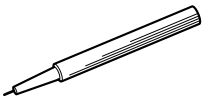
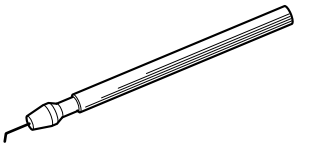
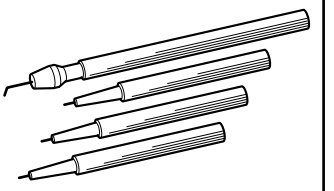
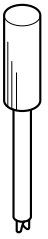
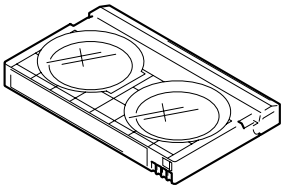
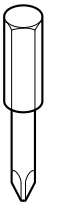
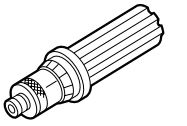
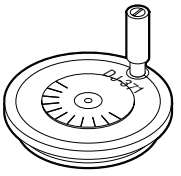
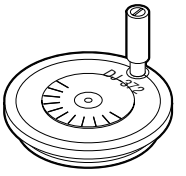
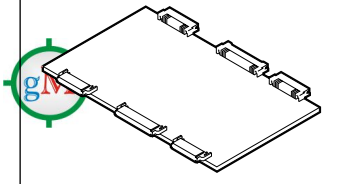
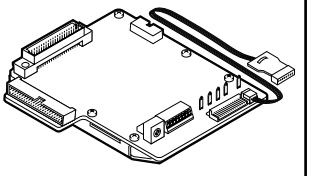
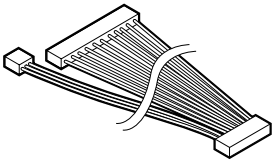
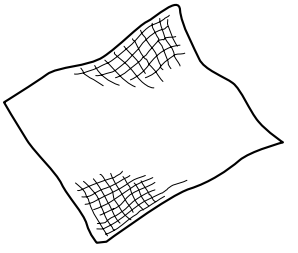
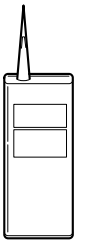
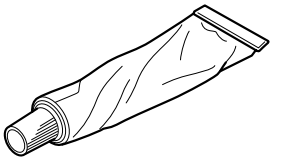
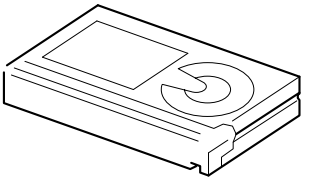
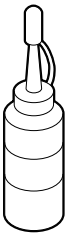
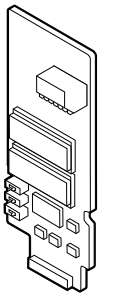
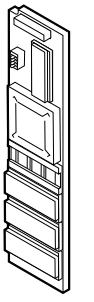
When replacing the battery, insert the replacement battery with the "+" and "−" ends correctly oriented. If the battery's positive (+) and negative (−) terminals are backward, physical injury or damage to peripheral equipment can be result due to explosion and or leakage of internal materials.

1. Remove the SSP-24 board (DSR-1800/P) or SSP-23 board (DSR-1600/P). (Refer to Section 3-5-1.)
2. Insert a slotted screwdriver between the battery and IC600, and remove the battery in the arrow direction.
3. Align the mark of the lithium battery to the mark on IC600, and attach until the four claws lock firmly.



## 3-8. Fixtures and Tools list

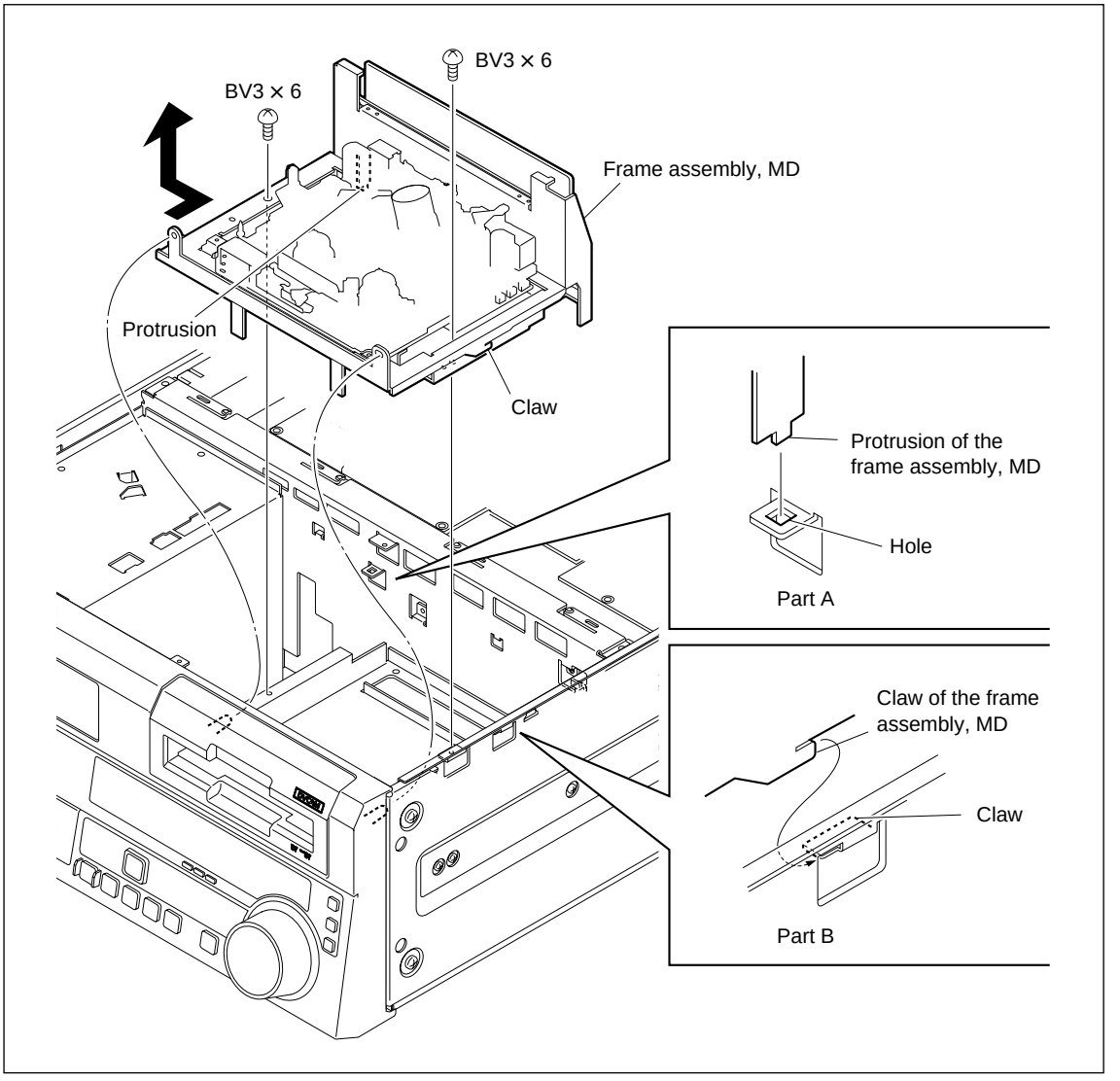
| Fig. | Part No. | Description | Uses |
|---|---|---|---|
| ① | J-6080-029-A | Small adjustment mirror | Video tracking adjustment |
| ② | J-6082-231-A | Washer mounting fixture (ø1.5) | Parts replacement |
| ③ | J-6082-232-A | Washer mounting fixture (ø1.2) | Parts replacement |
| ④ | J-6082-233-A | Washer mounting fixture (ø0.8) | Parts replacement |
| ⑤ | J-6082-234-A | Washer extracting fixture A | Parts replacement |
| ⑥ | J-6082-236-A | Washer fixture kit | Parts replacement (Set of No.2 to No.5) |
| ⑦ | J-6082-362-A | Tape guide adjustment driver | Tape guide height adjustment |
| ⑧ | J-6082-373-A | Torque cassette | FWD/REV winding torque adjustment |
| ⑨ | J-6325-110-A | Torque screwdriver‘s bit (M1.4) | Parts replacement |
| ⑩ | J-6325-380-A | Torque screwdriver’s bit (M2) | Parts replacement |
| ⑪ | J-6325-400-A | Torque screwdriver (3 kg) | Tightening screws |
| ⑫ | J-6443-710-A (CCW) | Brake torque gauge (CCW) (DJ-371) | Brake torque adjustment |
| ⑬ | J-6443-720-A (CW) | Brake torque gauge (CW) (DJ-372) | Brake torque adjustment |
| ⑭ | J-6444-980-A | Extension board (DJ-498) | Extension board for DSR-1800/P/1600/P |
| ⑮ | J-6444-610-B | Path adjustment board (DJ-461) | For tape path adjustment RF envelope detector fixture |
| ⑯ | J-6444-720-A | Path adjustment board connection cable (DJ-472) | Tape path adjustment |
| ⑰ | 3-184-527-01 | Cleaning cloth | Cleaning |
| ⑱ | 7-432-114-11 | Locking compound | Locking compound |
| ⑲ | 7-662-001-39 | Grease SG-941(20g) | Parts replacement |
| ⑳ | 8-967-999-02 | Alignment tape XH2-1AST | Tape path alignment (NTSC & PAL) |
| ㉑ | 8-967-999-22 | Alignment tape XH5-1A2 (NTSC) | Audio/video alignment (DVCAM) |
| | 8-967-999-26 | Alignment tape XH5-1AP2 (PAL) | Audio/video alignment (DVCAM for PAL) |
| ㉒ | 8-967-999-31 | Alignment tape XH4-1A (NTSC) | Audio/video alignment (DV) |
| ㉓ | 9-919-573-01 | Cleaning fluid | Cleaning |
| ㉔ | J-6444-970-A | System control/Servo download tool board (DJ-497) | Software version-up |
| ㉕ | J-6444-990-A | FPGA download tool board (DJ-499) | Software version-up |

| | | | |
|---|---|---|---|
| ①  | ② ③ ④  | ⑤  | ⑥  |
| ⑦  | ⑧  | ⑨ ⑩  | ⑪  |
| ⑫  | ⑬  | ⑭  | ⑮  |
| ⑯  | ⑰  | ⑱  | ⑲  |
| ⑳ ㉑ ㉒  | ㉓  | ㉔  | ㉕  |

# 3-9. Servicing Positions of the Frame Assembly, MD

## 3-9-1. Horizontal Positions

(1) Turn off the power switch.
(2) Remove the top panel. (Refer to Section 3-3.)
(3) Remove the cassette compartment (Refer to Section 3-4.)
(4) Remove the two screws, and life up the frame assembly, MD in the arrow direction. Make sure the frame assembly, MD does not touch part A.
(5) Engage the claw of the frame assembly, MD with the claw of part B, and insert the protrusion of the frame assembly, MD to the hole of part A.
(6) To return the frame assembly, MD to its original position, perform steps (1) to (5) in the reverse order.

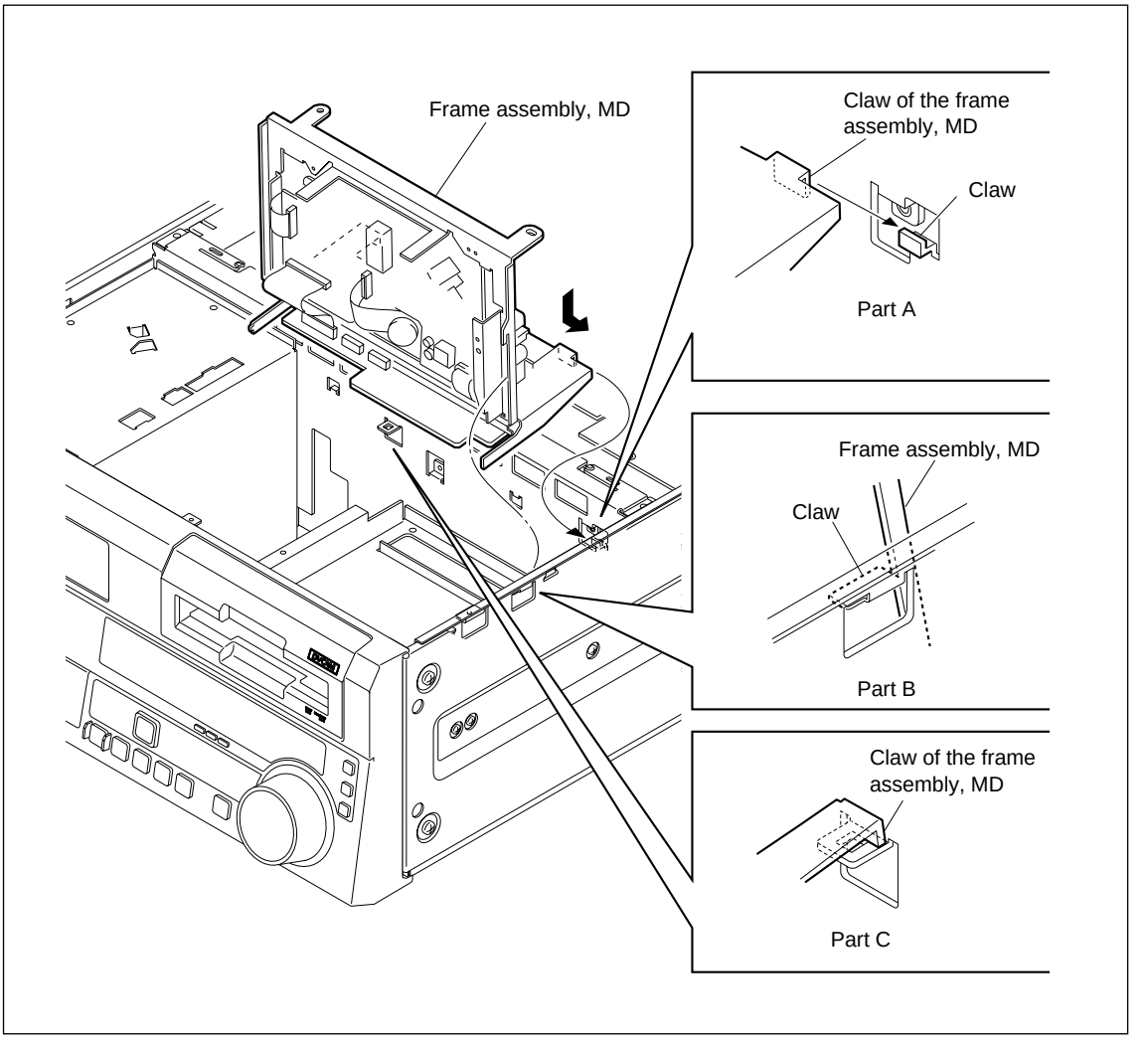



**Note**

Do not path adjustment and path checking in this position.
There are after reattachment of the frame assembly, MD in regular position.

## 3-9-2. Vertical Positions

(1) Perform steps (1) to (4) in the reverse order of Section 3-9-1, and lift up the frame assembly, MD.
(2) Place the frame assembly, MD in the upright position as shown in the figure.
(3) Engage the claw of the frame assembly, MD with the claw of part A.
(4) Touch the claw of part B and frame assembly, MD, and part C with the claw of the frame assembly, MD. At this time, check that the frame assembly, MD is supported at three points (part A, part B, and part C.)
(5) To return the frame assembly, MD to its original position, perform steps (1) to (4) in the reverse order.



# 3-10. Upgrading the System/Servo CPU Program Version

The DSR-1800/P/1600/P mounts the CPU for SY and SV on the SSP board and uses flash ROMs for loading this program.
For re-writing flash ROMs, two methods are provided.
(1) Use the fixture (DJ-497 : J-6444-970-A).
(2) Download softwares from a PC through RS-422.

## 3-10-1. Version Upgrade using the DJ-497

### 1. Setting of DJ-497

Write softwares into PROMs below.
ROMs to be used on the fixture DJ-497
SV CPU MX27C2000DC-12 (8-759-477-94) or equivalent
SY CPU M27C4001-10F1-(G) (8-759-568-73) or equivalent
As these CPUs employ 16 bits data bus, 2 pieces of PROMs are required for one CPU.
Write softwares into PROMs in the 8 bit split mode. A PROM at even address side is for CN102.
A PROM at odd address side is for CN101.

(1) Insert the PROMs, in which softwares are written, into the socket on the fixture DJ-497.
(2) Set bit 1 of S1 on the fixture DJ-497 to OPEN (upper side) and the rest of bits to the board side (lower side).
(3) Set S3 on the fixture DJ-497 to ROM side and S2 on the fixture DJ-497 to DOWN side.
(4) Set S4 on the fixture DJ-497 to 8M (at the SY CPU) or set to 4M (at the SV CPU).

### 2. How to upgrade

(1) Remove the top panel. (Refer to Section 3-3.) For DSR-1800/P, draw out the SSP-24 board using the extension board DJ-498.

(2) Connect the fixture DJ-497, on which PROMs are installed, as follows.

| CPU | Connect to DJ-497 |
|---|---|
| SY CPU (IC501/SSP-24 or 23) | CN1/SSP-24 or 23 |
| SV CPU (IC202/SSP-24 or 23) | CN2/SSP-24 or 23 |

(3) Turn on the power to the set, Then, writing starts.
While writing is being executed, the LEDs of the fixture DJ-497 show the status shown below.
D2 lights. ERASE is being executed.
D2 and D4 light. BLANK CHECK is being executed
D3 lights. COPY is being executed.
D4 lights. VERIFY is being executed.

(4) Only D5 (a green LED next to three red LEDs) lights, Then, writing is finished.
D5 lights. Normal
D1 lights. Abnormal
In an event of abnormally, suspect the cause judging from status of LEDs.

(5) Power down the set. And remove the fixture DJ-497.

(6) Turn on the power to the set, and confirm the version in the MAINTENANCE MENU.

## 3-10-2. Version Upgrade from a PC through RS-422

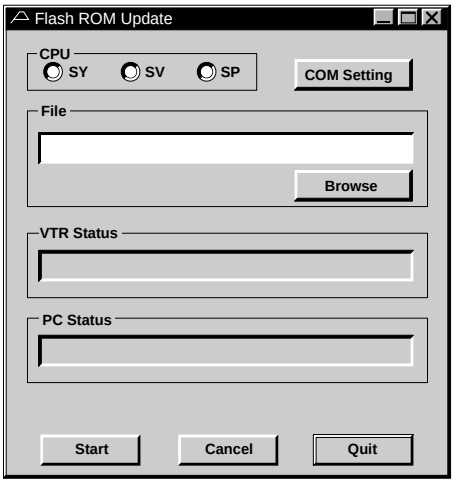
### 1. Preparation

To convert the RS-232C of a PC to RS-422 (9 pin), use a conversion box or conversion board available on the market.

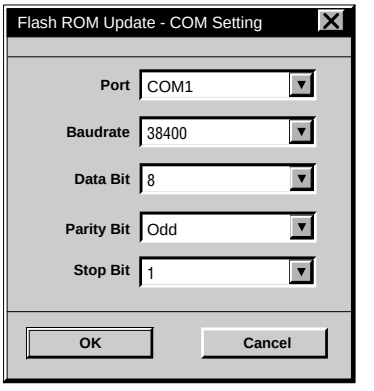
Install the version upgrade application software (fup.exe) on the PC on which Windows95 or 98 is installed.
Download the version upgrade software of CPUs to be upgrade.

### 2. How to use Fup.exe

Start up the fup.exe and then the main dialogue menu shown below appears.




**Main Dialogue**




**Communication Setting Dialogue**

| | |
|---|---|
| CPU : | Select one of SY and SV.<br>(Designate a target CPU to be transferred.) |
| COM Setting : | The communication setting dialogue appears.<br>(DO NOT assign items other than Port.) |
| File : | Enter a hex filename to be transferred in this field.<br>When a filename is selected using Browse, the selected filename appears.<br>Drag & Drop is supported. |
| Browse : | The file selection menu appears. |
| VTR Status : | The message from a VTR appears in this field. |
| PC Status : | This field shows a status such as “FINISH”, |
| Start : | The file transfer to a VTR is started. (Unless a filename is designated, it is invalid. ) |
| Cancel : | The file transfer to a VTR is stopped. |
| Quit : | The application is terminated. |

### 3. Operation

Operate in the order of “Select CPU.” → “ Designate hex.filename to be transferred.” → “Press Start button.”.

During transferring, the status is displayed in between “PC Status” and “ Start, Cancel and Quit buttons”.
The progress bar and the remaining time are displayed.

http://getMANUAL.com



### Message

VTR Status

| | |
|---|---|
| Erasing flash memory. | |
| Writing flash memory. | |
| Completed download. | |
| Unable to access to flash memory. | Flash ROM device error, Writing error |
| Unable to erase of flash memory. | Flash ROM erasure error |
| Verify Error occurs. | Verify-error in writing into flash memory |
| Checksum error occurs. | Checksum error in data received from a PC |
| Communication error occurs in VTR and PC | Overrun, flaming, parity error |

PC Status

| | |
|---|---|
| Trying communication with a PC. | Starts at the pressing the Start button and ends until VTR starts to erase flash memory. |
| Communication with a VTR is stopped. | A user pressed Cancel button. |

Message Box

| | |
|---|---|
| No response from a VTR | |
| Can’t set a VTR to remote mode. | |
| Can’t set a VTR to adjustment mode. | |
| Can’t set a VTR to download mode. | |
| File not found. | When Start button is pressed, if a file is not found. |
| Can’t open a port. | When Start button is pressed, RS-232C COM does not open. |
| A VTR interrupts communication. | Before transfer finishes, a VTR finishes. |

VFD Display

| | |
|---|---|
| loading XX (XX : SY, SV, SP) | Now loading |
| complete! | Download is completed without fail. |
| incomplete! | Download is abnormally terminated |
| Error91-130 | SY flash ROM is abnormal. (Valid only in download mode.) |
| Error91-430 | SP flash ROM is abnormal. (Valid only in download mode.) |
| Error91-215 | Waiting for data sent from a PC (Communication error between SY and KY) Power down a VTR once. |

Monitor

| |
|---|
| ALARM<br>Now upgrading<br><br>After version upgrade<br>power down once. |

After the version upgrade is completed, turn off and on the power of the VTR.
(In case of upgrading the same CPU or other CPU, it is not necessary to power down.)

If properly finished, confirm that CPU versions written in the MAINTENANCE MENU are correct.

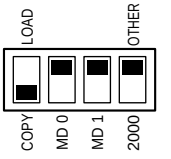
# 3-11. Upgrading the FPGA Program Version

The DSR-1800/P/1600/P mounts the FPGA (field programmable gate alley) on the process board and uses flash ROMs for loading this program.
The version of these flash ROMs mounted on the board can be upgraded using the following method.

## 3-11-1. Upgrading the Version

(1) Prepare a DJ-499 (J-6444-990-A).
(2) Write the required number of rewrittable program files in the PROM (M27C1001-70F1 (F8) (8-759-58-91) or equivalent). Refer to the following for the number required.
(3) Mount the PROMs in order from the one with the smallest number to the DJ-499 IC100 to IC103.
(4) Set the DJ-499 as follows.
(5) With the power of the unit set to OFF, mount the connector of the corresponding board to DJ-499.
(6) Turn ON the power of the unit.
- Of the three LEDs on the DJ-499, the green D1 at the end lights up and goes off.
  (The dummy data will be loaded in the FPGA. It will be completed when D1 goes off.)
- The same green D1 will blink after a while.
  (The flash ROM on the board is erased and new data is downloaded.)
- It stops blinking, and the green D2 in the middle lights up, meaning that upgrading has ended normally.
- If the red D3 in the middle lights up halfway through, it means that a writing error has occurred. Check if the DJ-499 is connected properly, and perform from step (6).

## 3-11-2. Setting of DJ-499

| Model name | Board name | Connect to DJ-499 | PROM file name | Switch setting of DJ-499 S3 |
|---|---|---|---|---|
| DSR-1800/P | DPR-175 | CN454 | SIF-00/01/02 |  |
| | | CN455 | FU-00/01/02/03 | |
| DSR-1600/P | SSP-23 | CN1454 | SIF-00/01/02 | |
| | | CN1455 | FU-00/01/02/03 | |

# Section 4
# Error Messages

## 4-1. Alarm Display

This unit has an alarm display function.
When a problem is detected, an alarm is displayed immediately in the timer counter block. The alarm and a message describing the countermeasure are displayed on a video monitor connected to the VIDEO OUT 2 (SUPER) connector. This unit has two types of alarms : one is for operators while the other is for service persons. This manual describes only the alarms for service persons. For details of alarms for operators, refer to the operating instruction or overview in this manual. Activating the alarm display may influence the system, such as when the reference video signal is not used. Therefore, you can select whether or not to display the alarm from the Setup menu selection. As for Setup menu, refer to Section 1 of this manual or to the operating instruction. However, the alarms for service persons are displayed regardless of the Setup menu setting.

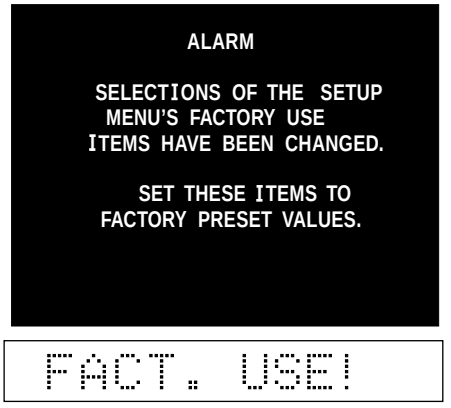
### 4-1-1. Alarm Display when the Main Power is Turned On

Detection : Checks the settings of switch S400 on the SSP-24 board (DSR-1800/P)/SSP-23 board (DSR-1600/P) and the contents of non-volatile memory (EEPROM).
Operation after detection : None
Display : The alarm is displayed until any key is pressed.

Detection : Checks the version of the Setup menu.
Operation after detection : The Setup menu operates using the factory settings. The contents of the non-volatile memory (EEPROM) remain unchanged. Therefore, if the setting of the Setup menu is not changed, the same alarm will appear when the main power is turned on.
Display : The alarm is displayed until any key is pressed.

Detection : Checks that switch S400-1 to 4 on the SSP-24 board (DSR-1800/P)/SSP-23 board (DSR-1600/P) is set to ON.
Operation after detection : None
Display : The alarm is displayed until any key is pressed.

Detection : Checks that the FACTORY USE item of the Setup menu is changed.
Operation after detection : None
Display : The alarm is displayed until any key is pressed.

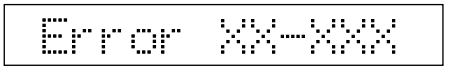


## 4-2. Error Codes

This unit has a self diagnostics function which detects internal abnormalities. When a problem is detected, an error code is displayed immediately in the time counter block, and details of the error appear on the video monitor connected to the VIDEO OUT 2 (SUPER) connector.

**Note**

An error code appears in the column shown by XX-XXX on the display.




When detected, some errors turn the unit to AUTO OFF. (Refer to Section "4-2-3. Error Codes," excluding error code 08-032.)
This error is kept in memory even after the main power of this unit is turned off. In other words, the error code or the contents of the detected error appear even when the main power of this unit is turned off and then back on again, so this unit enters AUTO OFF mode again.

This unit enters the emergency EJECT mode when the EJECT key is pressed at this moment.

Reference

In the emergency EJECT mode, the tape is ejected gently by usable motor assuming that the tape is slack or a device may be faulty.

The following message appears on the video monitor connected to the VIDEO OUT 2 (SUPER) connector when this unit enters the emergency EJECT mode.
The error code is displayed on the time counter.

The message shown to the right appears on the video monitor connected to the VIDEO OUT 2 (SUPER) connector when a cassette tape is ejected in the emergency EJECT mode.
The error code is displayed on the time counter.

The message shown to the right appears on the video monitor connected to the VIDEO OUT 2 (SUPER) connector when a cassette tape cannot be ejected with the emergency EJECT mode.
The error code is displayed on the time counter.

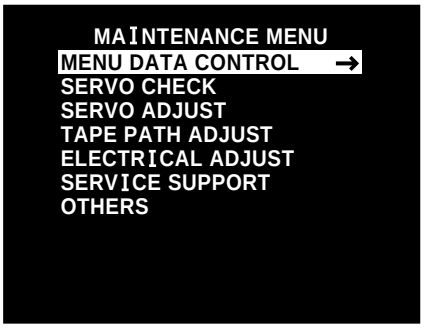
Perform Section “4-3-1. How to Take Out the Cassette Whose Tape is Slacked (MANUAL EJECT) ” when a cassette tape cannot be ejected with the emergency EJECT mode.

## 4-2-1. Display of Previously Detected Error Codes

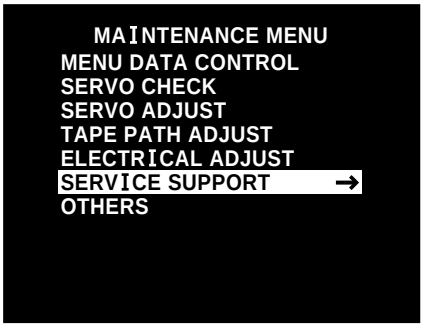
When the DSR-1800/P/1600/P detects an internal abnormality, the error code is memorized in EEPROM. (Excluding error code 9X-XXX)
A maximum of 8 error codes detected previously, starting from the latest error code, can be displayed.

### How to display the error code

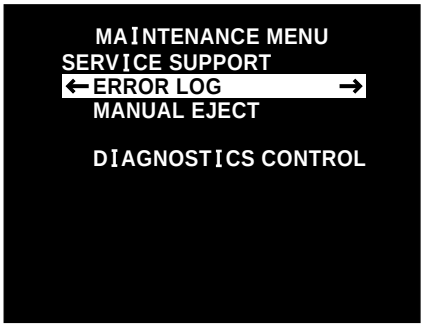
1. While pressing the [←] key, press the [MENU] key.

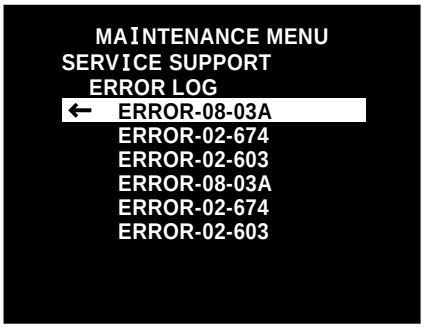



2. Move the cursor to SERVICE SUPPORT so that the letters are highlighted using the [↑], [↓] keys, then press the [→] key.




3. Move the cursor to ERROR LOG so that the letters are highlighted using the [↑], [↓] keys, then press the [→] key.
   The display changes as shown to the right, and the error log appears.



## 4-2-2. Main Codes and Sub Codes

### Main codes

The main code is a two-digit number that indicates the system which sensed the error.

Main code 0X : Servo and tape path system error
Main code 2X : Mechanism control system error
Main code 3X : Sensor error
Main code 91 : Communication system and interface system error
Main code 92 to 94 : Sync. system error
Main code 95 : Digital signal process system error and communication error with ICs

### Sub codes

The sub code is a three-digit number. Each digit has the following meaning.

---

**When the main code is 0X or 2X :**

X X X
| | |
| | Third digit : Abnormal symptom
| Second digit : Device which senses abnormality
First digit : Mode which senses abnormality.

#### First digit : Mode which senses abnormality.

0 : Mode cannot be identified, or mode identification is not necessary.
1 : Cassette down mode
2 : Threading mode
3 : STOP mode
4 : F. FWD or REW mode
5 : SEARCH mode
6 : PLAY or RECORD mode
7 : STANDBY-OFF mode
8 : Unthreading mode
9 : Cassette up mode
A : Cassette out mode
(State that a cassette is ejected.)

#### Second digit : Device which senses abnormality

0 : Device cannot be identified, or device identification is not necessary.
1 : Cassette up/down motor/sensor
2 : Threading motor/FG/sensor
3 : Drum motor/FG
4 : Capstan motor/FG
5 : Supply reel motor/FG
6 : Supply reel brake solenoid
7 : Takeup reel motor/FG
8 : Takeup reel brake solenoid
9 : Supply and takeup reel motor/FG
A : Tension regulator
B : Pinch solenoid
C : Reel position motor/sensor
D : Head cleaning solenoid
E : M stop solenoid

#### Third digit : Abnormal symptom

0 : Abnormal symptom identification is not necessary.
1 : Operation could not be completed within the specified time.
2 : Abnormal speed detected.
3 : Tape slack detected.
4 : FG cannot be detected.
5 : FG detected.
6 : Rotating direction error detected.
7 : Excessive tension detected.
8 : Abnormal current detected.
9 : The full top or full end of a tape cannot be released.
A : Retry in progress
(Unthreading and re-threading)

**When the main code is 3X :**

All sub codes are 000.

**When the main code is 91 :**

X X X
- Third digit : Abnormal symptom
- Second digit : CPU (microprocessor) or IC of the communication counterpart.
- First digit : CPU (microprocessor) or IC which detects the abnormality.

**First and second digits : CPU (microprocessor) code.**

1 : System control main CPU (SSP-24 (DSR-1800/P)/SSP-23 (DSR-1600/P), IC501)
2 : Keyboard u-COM (KY-484, IC102)
3 : Memory
4 : Servo main CPU (SSP-24 (DSR-1800/P)/SSP-23 DSR-1600/P), IC202)
5 : Servo sub u-COM (DR-428, IC1)
7 : SPCON main CPU (SSP-24 (DSR-1800/P)/SSP-23 DSR-1600/P), IC501)
D : DV I/F u-COM (DV-26, IC602)
E : Digital I/F u-COM (SDI-61, IC402)
F : SDI I/F u-COM (SDI-62, IC703)

**Third digit : Abnormal symptom (when the communication counterpart is other than memory)**

1 : Abnormal checksum
2 : Abnormality of overrun
3 : Abnormal parity
4 : Abnormal framing
5 : Communication could not be completed in the specified time.

**Third digit : Abnormal symptom (when the communication counterpart is memory)**

0 : Abnormality of ROM
1 : Abnormality in the external memory area
2 : Abnormality in the internal memory area
3 : Abnormality in the common memory-1 area
4 : Abnormality in the common memory-2 area
9 : Abnormality in the EEPROM area
A : Abnormality in the NVRAM area
B : Abnormality in the Hours Meter area
C : Abnormality in the volume adjust data area
F : Abnormality of MIC

**When the main code is from 92 to 94 :**

X X X
- Third digit : Abnormal signal
- Second digit : IC to which the signal is input
- First digit : CPU (microprocessor) which detects the abnormality
- . . . . . Same as the main code 91

**Third digit : Abnormal signal**

1 : Reference frame pulse of the output signal (NSG OE)
2 : Reference track pulse of the playback side (P-TRKT)
3 : Reference frame pulse of the playback side (P-FLTT)
4 : Reference track pulse of the record side (R-TRKT)
5 : Reference frame pulse of the record side (R-FLTT)
6 : Reference track pulse of the playback side (P-TRKD)
7: Reference frame pulse of the playback side (P-FLTD)
8: Reference track pulse of the record side (R-TRKD)
9: Reference frame pulse of the record side (R-FLTD)

**When the main code is 95 :**

X X X
- Second and third digits : IC of the communication counterpart. (The second digit indicates the communication line number and the third digit indicates the CS number.)
- First digit : CPU (microprocessor) or IC which detects the abnormality.
- . . . . . Same as the main code 91

## 4-2-3. Error Codes

### Main code 0X : abnormality of servo and tape path system

### ① Main code 02

| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 058 | Detected an abnormal current in the S reel motor. | AUTO OFF | EJECT (Emergency EJECT) | Displayed until the next cassette tape is inserted. |
| 068 | Detected an abnormality of reel brake plunger solenoid. | | | |
| 078 | Detected an abnormal current in the T reel motor. | | | |
| 0B8 | Detected an abnormality of pinch plunger solenoid. | Cassette tape insertion and unthreading are prohibited until the error is solved. | | Displayed until the error is solved. |
| 154 | Failed to detect the S reel FG by the FG check during cassette tape insertion. | Cassette tape will be ejected. | – | Displayed until the next cassette tape is inserted. |
| 174 | Failed to detect the T reel FG by the FG check during cassette tape insertion. | | | |
| 194 | Failed to detect both S and T reel FGs by the FG check during cassette tape insertion. | | | |
| 254 | Failed to detect the S reel FG during threading. | AUTO OFF | EJECT (Emergency EJECT) | |
| 255 | Detected the S reel FG during threading. | | | |
| 274 | Failed to detect the T reel FG during threading. | | | |
| 275 | Detected the T reel FG during threading. | | | |
| 291 | Failed to complete winding a tape. | | | |
| 355 | Detected the S reel FG during STOP and STILL. | | | |
| 375 | Detected the T reel FG during STOP and STILL. | | | |
| 395 | Detected both S and T reel FGs during STOP and STILL. | | | |
| 402 | Detected an abnormal tape speed during F. FWD and REW. | STOP | The machine operates normally after the error is solved. | |
| 403 | Detected slack tape during F. FWD and REW. | AUTO OFF | EJECT (Emergency EJECT) | |
| 454 | Failed to detect the S reel FG during F. FWD and REW. | | | |
| 474 | Failed to detect the T reel FG during F. FWD and REW. | | | |
| 494 | Failed to detect both S and T reel FGs during F. FWD and REW. | | | |
| 496 | Detected the abnormal direction of S and T reel rotation during F. FWD and REW. | | | |
| 503 | Detected slack tape during search. | | | |
| 554 | Failed to detect the S reel FG during search. | | | |
| 574 | Failed to detect the T reel FG during search. | | | |
| 594 | Failed to detect the S and T reel FGs during search. | | | |
| 596 | Detected the abnormal direction of S and T reel rotation during search. | | | |
| 603 | Detected slack tape during PLAY and REC. | | | |

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| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 654 | Failed to detect the S reel FG during PLAY and REC. | AUTO OFF | EJECT (Emergency EJECT) | Displayed until the next cassette tape is inserted. |
| 674 | Failed to detect the T reel FG during PLAY and REC. | | | |
| 694 | Failed to detect both S and T reel FGs during PLAY and REC. | | | |
| 696 | Detected the abnormal direction of S and T reel rotation during PLAY and REC. | | | |
| 803 | Detected slack tape during unthreading. | | | |
| 854 | Failed to detect the S reel FG during unthreading. | | | |
| 855 | Detected the S reel FG during unthreading. | | | |
| 874 | Failed to detect the T reel FG during unthreading. | | | |
| 875 | Detected the T reel FG during unthreading. | | | |
| A55 | Detected the S reel FG during cassette eject. | Insertion of a cassette is inhibited until the error is solved. | | |
| A75 | Detected the T reel FG during cassette eject. | | | |
| A95 | Detected both S and T reel FGs during cassette eject. | | | |

## ② Main code 06

| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 3A7 | Detected abnomal tape tension during STOP. | AUTO OFF | EJECT (Emergency EJECT) | Displayed until the next cassette tape is inserted. |
| 4A7 | Detected abnomal tape tension during F.FWD/REW. | | | |
| 5A7 | Detected abnomal tape tension during SEARCH. | | | |
| 6A7 | Detected the abnormal tape tension during PLAY and RECORD. | The mode at the time of detection is kept continued. (If the mode is PLAY, PLAY continues.) If mode is changed to other than PLAY and RECORD, machine enters AUTO OFF. | The machine operates normally after the error is solved. The PLAY and RECORD modes continue but other modes are changed to STOP then EJECT (Emergency EJECT). | Displayed until the error is solved and any key is pressed. |

## ③ Main code 07

| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 042 | Detected the abnormal capstan speed. | STOP | The machine operates normally after the error is solved. | Displayed until any key is pressed. |
| 144 | Failed to detect the capstan FG by the FG check during cassette tape insertion. | Cassette tape will be ejected. | – | Displayed until the next cassette is inserted. |

### ④ Main code 08

| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 03A | Detected the abnormal drum speed.<br>**Video monitor display**<br> | Retry (The mechanism unthreads once then threads again.) | EJECT | Displayed until the error is solved. |
| 032 | The abnormal drum speed error is not solved. | AUTO OFF | EJECT | Displayed until the next cassette is inserted. |

### ⑤ Main code 09

| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 010 | Detected abnomal position of cassette compartment. | Cassette tape insertion and unthreading are prohibited until the error is solved. | | Displayed until the error is solved. |
| 020 | Detected an abnormality of threading position sensor. | | | |
| 028 | Detected an abnormal current of threading motor. | | | |
| 221 | Failed to complete threading within the specified time | AUTO OFF | EJECT (Emergency EJECT) | Displayed until the next cassette is inserted. |
| 224 | Failed to detect the threading FG during threading. | | | |
| 821 | Failed to complete unthreading within the specified time | | | |
| 824 | Failed to detect the threading FG during unthreading. | | | |

## • Main code 2X : Abnormality related to the mechanism control

### ① Main code 20

| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 018 | Detected the abnormal current in the cassette up/down motor. | AUTO OFF | EJECT (Emergency EJECT) | Displayed until the next cassette is inserted. |
| 111 | Failed to complete the cassette down motion within the specified time. | | | |
| 911 | Failed to complete the cassette up motion within the specified time. | | | |

### ② Main code 21

| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 0C8 | Detected the abnormal current in the reel position motor. | AUTO OFF | EJECT (Emergency EJECT) | Displayed until the next cassette is inserted. |
| OE8 | Detected the abnormal current of M stop plunger solenoid. | | | |
| 1C1 | Failed to complete the reel position movement within the specified time. | Cassette tape will be ejected. | | |

### ③ Main code 22

| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 0D8 | Detected an abnormal current of cleaning plunger solenoid. | AUTO OFF | EJECT (Emergency EJECT) | Displayed until the next cassette is inserted. |

### • Main code 3X : Sensor trouble

Sub codes are all 000.

| Sub code | Detected contents | Operation after detecting an abnormality | Operable mode | Display period |
|---|---|---|---|---|
| 31 | Failed to release the tape top. | STOP | PLAY, FF, EJECT | Displayed until the error is solved and any key is pressed. |
| 32 | Failed to release the tape end. | STOP | PLAY, REW, EJECT | |
| 33 | Detected an abnormal current of reel shift sensor LED. | Insertion of cassette tape is inhibited. | – | |
| 34 | Detected an abnormality of threading sensor. | Cassette tape insertion and unthreading are prohibited until the error is solved. | | |
| 35 | Detected an abnormality of cassette compartment position sensor. | EJECT | – | |
| 36 | Detected an abnormality of fan motor. | Only error is displayed. | – | |
| 39 | Detected an abnormality of cassette top/end sensor LED. | STOP | PLAY, EJECT | |
| 3A | Detected an abnormality of tension sensor. | AUTO OFF | EJECT (Emergency EJECT) | |

## Main code 91 : Abnormality of communication system or interface system

| Main code | Sub code | Detected contents |
|---|---|---|
| 91 | 125 | Communication error between system control and keyboard (detected by SY). |
| | 130 | System control detected abnormality of ROM. |
| | 131 | System control detected abnormality of external memory. |
| | 132 | System control detected abnormality of internal memory. |
| | 133 | System control detected abnormality of common memory for SERVO. |
| | 134 | System control detected abnormality of common memory for SPCON. |
| | 139 | System control detected abnormality of EEPROM (IC1 on the SE-463 board). |
| | 13A | Detected abnormality in NVRAM. |
| | 13B | Detected abnormality in Resetable Hour Meter. |
| | 13C | Detected abnormality in Volume adjustment data area. |
| | 13F | Communication error to MIC. |
| | 145 | Communication error between system control and servo. |
| | 175 | Communication error between system control and SPCON. |
| | 1D5 | Communication error between system control and the DV microprocessor. |
| | 1E5 | Communication error between system control and the DIF microprocessor. |
| | 1F5 | Communication error between system control and the SDI microprocessor. |
| | 215 | Communication error between system control and keyboard (detected by KY). |
| | 430 | Servo main detect abnormality of ROM. |
| | 431 | Servo detected abnormality of external memory. |
| | 439 | Detected abnormality in the servo adjustment data area. |
| | 43B | Detected abnormality in Unresetable Hours Meter. |
| | 455 | Communication error between servo main and servo sub microprocessors. |
| | 539 | Detected abnormality in the EQ data area. |
| | D39 | DV microprocessor detected abnormality of EEPROM (DV-26, IC601). |

## Main code 92 to 94 : Abnormality of sync system

| Main code | Sub code | Detected contents |
|---|---|---|
| 92 | 101 | System control detected abnormality in NSG OE. |
| | 702 | SPCON detected abnormality in P-TRKT. |
| | 703 | SPCON detected abnormality in P-FLTT. |
| | 704 | SPCON detected abnormality in R-TRKT. |
| | 705 | SPCON detected abnormality in R-FLTT. |
| 93 | 407 | The servo main microprocessor detected abnormality of P-FLTD. |
| | 506 | The servo sub microprocessor detected abnormality of P-TRKD. |
| 94 | 409 | The servo main microprocessor detected abnormality of R-FLTD. |
| | 508 | The servo sub microprocessor detected abnormality of R-TRKD. |

## Main code 95 : Communication error with digital process system IC

| Main code | Sub code | Detected contents |
|---|---|---|
| 95 | 120 | Communication error between system control and C1R MOD. |
| | 122 | Communication error between system control and C1P MOD. |
| | 12A | Communication error between system control and NSG. |
| | 12C | Communication error between system control and VPRAD. |
| | 415 | Communication error between servo and D1R. |
| | 416 | Communication error between servo and HIF. |
| | 423 | Communication error between servo and D1P. |
| | 511 | Communication error between drum and M1. |
| | 710 | Frame communication error between SPCON and D1P. |
| | 711 | Track pair communication error between SPCON and D1P. |
| | 712 | Communication error between SPCON and V2P. |
| | 713 | Communication error between SPCON and F1P. |
| | 714 | Communication error between SPCON and SIFE. |
| | 715 | Communication error between SPCON and SIFP. |
| | 720 | Communication error between SPCON and AIFP. |
| | 730 | Frame communication error between SPCON and D1R. |
| | 731 | Track pair communication error between SPCON and D1R. |
| | 732 | Communication error between SPCON and V2R. |
| | 733 | Communication error between SPCON and F1R. |
| | 734 | Communication error between SPCON and SIFR. |
| | 740 | Frame communication error between SPCON and A1R Front. |
| | 741 | Track pair communication error between SPCON and A1R Front. |
| | 742 | Frame communication error between SPCON and A1R Rear. |
| | 743 | Track pair communication error between SPCON and A1R Rear. |
| | 744 | Communication error between SPCON and AIF-INDI. |
| | 745 | Communication error between SPCON and ACTL. |
| | 751 | Communication error between SPCON and REC-DSP. |
| | 752 | Communication error between SPCON and PB-DSP. |
| | 753 | Communication error between SPCON and OUT-DSP. |

## 4-2-4. Possible Causes of Errors

### Possible causes of errors

| Main code | 02 | | | | | | | | | | | | 06 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sub code / Possible causes | 403<br>503<br>603 | 574<br>674<br>803 | 554<br>654 | 402<br>454<br>474 | 355<br>375 | 058<br>078 | 154<br>174<br>194<br>255<br>275<br>875<br>A55<br>A75<br>A95 | 254<br>854 | 594<br>694 | 494 | 395 | 496<br>596<br>696 | 3A7<br>4A7<br>5A7<br>6A7 |
| 1. Tape is stuck to the tape running mechanism. | O | O | O | O | | | | O | | O | | | O |
| 2. Tape is loosely wound in the cassette. | O | O | O | O | O | | | | | | O | O | |
| 3. Cassette tape is not confined properly. (Cassette compartment is unlocked.) | O | O | O | O | | | | O | O | O | O | O | |
| 4. Reel motor does not generate the correct torque. | O | O | O | O | O | O | O | O | O | O | O | O | O |
| 5. Abnormality of reel FG | O | O | O | O | O | | O | O | O | O | O | O | O |
| 6. Tension regulator is defective. | O | | | | | | | | | | | | |
| 7. Cut-and-spliced tape is used. | | O | O | | O | | | | O | | O | O | |
| 8. Top detector and end detector are defective. | | | O | O | | | | | O | O | | | O |
| 9. Pinch roller has insufficient pressure against capstan. | | | | | | | | | O | | | O | |

### Check procedure for the possible causes, and the related circuit boards and devices

| Possible causes | Check items and check procedure | Related circuit boards and devices |
|---|---|---|
| 1. Tape is stuck to the tape running mechanism.<br>• Tape is dirty.<br>• Tape run mechanism is dirty.<br>• Humidity or condensation | • Check if tape is stuck to tape guides or drum.<br>• Check if foreign material is adhered to tape.<br>• Check if tape is damaged.<br>• Check if foreign material is adhered to tape run mechanism and drum. | |
| 2. Tape is loosely wound in the cassette.<br>• A tape which has been used for many times, is used.<br>• A damaged tape is used. | • Check if tape has severe non-uniform winding. | |
| 3. Cassette tape is not confined properly. (Cassette compartment is unlocked.) | Check that the four pins of the cassette compartment are inserted into the holes of the slant table.<br>Check that the cassette compartment retainer is securely fastened.<br>↓<br>If a cassette compartment is unlocked when a cassette compartment is inserted, exchange the cassette compartment.<br>↓<br>When a cassette compartment is lock after it is exchanged, the trouble is caused by the cassette compartment. Otherwise the trouble is caused by the defective drive circuit. | cassette compartment<br>DR-428 board |

| Possible causes | Check items and check procedure | Related circuit boards and devices |
|---|---|---|
| 4. Reel motor does not generate the correct torque.<br>• Reel brake has mechanical defect.<br>• Reel brake solenoid is open.<br>• Reel brake solenoid drive IC is defective.<br>• Reel motor is defective.<br>• Reel motor drive circuit is defective.<br>• Harness is defective. | • When the S and T reel brakes are considered to be the cause of trouble :<br>Check the S and T reel brakes.<br>Check that the S and T reel brakes are released.<br>• When the S and T reel motors are considered to be the cause of trouble :<br>Perform the servo adjustment.<br>Confirm that the servo adjustment is completed as intended. | When the reel brake is considered to be the cause of trouble :<br>DR-428 board, reel brake solenoid<br><br>When the S and T reel motor or the S and T reel FG is considered to be the cause of trouble :<br>DR-428 board, S and Treel motor |
| 5. Abnormality of reel FG<br>• S and T reel motor is defective.<br>• S and T reel FG amp is defective. | Perform the S and T reel adjustment.<br>Confirm that the reel FG adjustment is completed as intended. | |
| 6. Tension regulator is defective. | Check the magnet position in the tension adjust menu.<br>Confirm that OK appears on display. | SSP-24 board (DSR-1800/P)/<br>SSP-23 board (DSR-1600/P),<br>SE-538 board, DR-428 board |
| 7. Cut-and-spliced tape is used. | | |
| 8. Top detector and end detector are defective. | Check the tape top and tape end.<br>The top and end sensor must turn on and off correctly. | When the tape top sensor is considered to be the cause of trouble :<br>SE-522 board, DR-428 board,<br>tape top sensor LED<br>When the tape end sensor is consid ered to be the cause of trouble :<br>SE-521 board, DR-428 board,<br>tape end sensor LED |
| 9. Pinch roller has insufficient pressure against capstan.<br>• Pinch roller has mechanical defect.<br>• Pinch solenoid is open.<br>• Pinch solenoid drive IC is defective. | Check the pinch roller.<br>Pinch roller must be pressed against the capstan shaft correctly. | DR-428 board, pinch solenoid |

# 4-3. Countermeasure in an Emergency

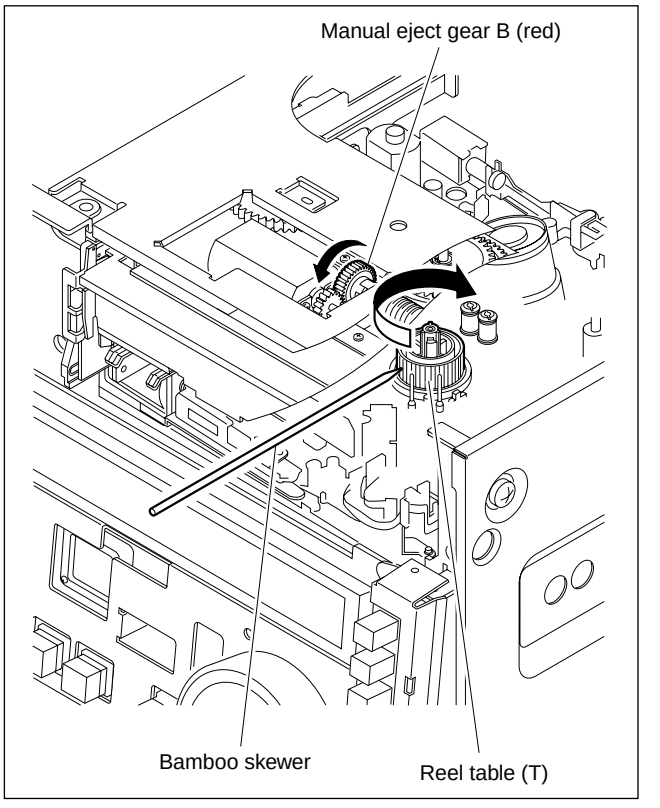
## 4-3-1. How to Take Out the Cassette Whose Tape is Slacked (MANUAL EJECT)

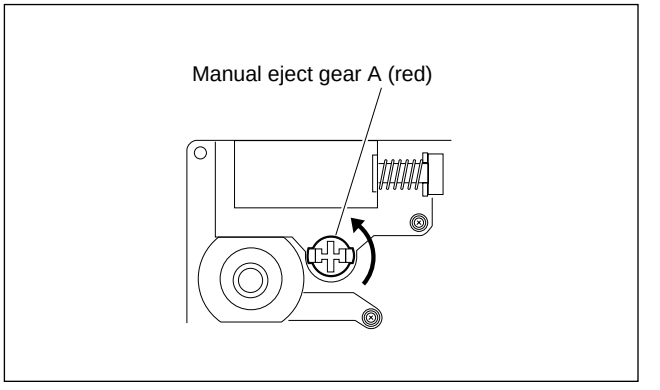
(1) Turn the power off.
(2) Remove the top panel. (Refer to Section 3-3.)
(3) Remove the front panel. (Refer to Section 3-3.)
(4) Turn the manual eject gear A (red) in the arrow direction with a phillips screwdriver while pressing the gear. When the tape comes to slack, turn the reel table from the front side utilizing the bamboo skewer and wind the tape.

**Notes**

- In a case of standard cassette and M cassette :
  Turn the reel table (T)
- In a case of mini cassette :
  Turn the reel table (S)

(5) Repeat step (4) until each guide comes to the unthreading end position and furthermore the tape completely returns into the cassette.
(6) Turn the manual eject gear B (red) in the arrow direction until the cassette compartment completely comes into cassette out state.



## 4-3-2. Head Cleaning when Head Clogging Occurs

Clean the video head as follows when the video head gets dirty.

### Procedure to use the cleaning cassette

**Note**

Use only the cleaning cassette tape as follows.
If another cleaning cassette tape is used, abnormal abrasion or breakage of the video head could occur.

Cleaning cassette tapes :

DV12CL (Standard)
DVM12CL (Mini)

1. Insert the specific cleaning cassette tape in this unit.
   The unit is automatically set in the PLAY mode and the cleaning tape starts running.
   Confirm that the PLAY key lights and the display appears.

2. The cleaning cassette tape is automatically ejected after running for 10 seconds.
   **Note**
   Do not rewind the cleaning cassette tape to use it again.

3. Make sure that the head is no longer dirty.
   If the video head is still dirty after step 2 above, clean the video head as follows.

### Procedure to use the cleaning cloth

1. Soak the cleaning cloth with cleaning liquid and bring it into contact lightly with the video head.
2. Turn the upper drum slowly by hand in the rotating direction of the head (counterclockwise when viewed from the top) to clean the video head.

**Notes**

- Never move the cleaning cloth in the vertical direction against the video head because it may break the head.
- Turn the power switch off when cleaning the video head.

## 4-3-3. Operating the VTR without A Cassette Tape

The VTR can be operated without a cassette tape by the following switch setting.

### Switch setting

1. Remove the cassette compartment from this unit.
2. Turn on switches S400-4 of the SSP-24 board (DSR-1800/P)/SSP-23 board (DSR-1600/P).
3. Then turn on the main power.

### Operating method

#### Threading

While pressing the S/T reel motors, press the STOP key.
The upper drum rotates, threading ring rotates. The unit enters the threading mode.
The tension arm and the threading ring move to the specified position, then the threading is completed.
This condition in which the threading is completed is referred to as the STOP status.

#### PLAY

Press the PLAY key.
The pinch roller is pressed against the capstan shaft to enter the PLAY status.
When the PLAY key is pressed during threading, the pinch roller is pressed against the capstan shaft to enter the PLAY status after the threading has completed.

#### FF

Press the F FWD key.
The pinch roller is pressed against the capstan shaft to set the FWD.SEARCH to five-times speed.

#### REW

Press the REW key.
The pinch roller is pressed against the capstan shaft to set REV.SEARCH to five-times speed.

### REC

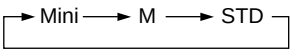
While pressing the record proof sensor on the right side of the T side reel table, press both the PLAY key and the REC key.
The pinch roller is pressed against the capstan shaft to enter REC status.
When the record proof sensor is released, the REC status is released and the recorder returns to PLAY status.

### Unthreading

Press the EJECT key.
Each guide moves to the specified position to complete the unthreading.

### Reel position selection

Press the SET (YES) key on the control panel.
Reel position will be changed as shown below in accordance with the number of pressing the SET (YES) switch.




**Note**

Make sure to turn off switches S400-4 on the SSP-24 board (DSR-1800/P)/SSP-23 board (DSR-1600/P) after the adjustment.

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# Section 5
# Maintenance Menu

## 5-1. Menu Structure

This unit has a maintenance menu which is used for maintenance.
The maintenance menu has a layered structure through which you move to perform the various checks, settings and adjustments using the specified menu items. Contents of the maintenance menu are displayed on the video monitor connected to the VIDEO OUT 2 (SUPER) connector or the SDI OUTPUT 2 (SUPER) connector and the time counter of DSR-1800/P1600/P.

Values in parenthesis ( ) are time counter display.

| MENU, First layer | MENU, Second layer | MENU, Third layer |
|---|---|---|
| MENU DATA CONTROL (MENU CNT) | MENU STATUS DISPLAY (>MENU STA)<br>SAVE MENU DATA (>Save MENU)<br>LOAD MENU DATA (>Load MENU) | |
| EDIT CHECK | VIDEO INSERT (>VIDEO INS)<br>A1 INSERT (>A1 INS)<br>A2 INSERT (>A2 INS)<br>TC INSERT (>TC INS)<br>ASSEMBLE (>ASSEMBLE) | |
| SERVO CHECK (SV Check) | SENSOR CHECK (>Sensor) | CASS-COMPARTMENT (>>Cass-COM)<br>TAPE TOP/END (>>Top/End)<br>HUMID [MOISTURE] (>>HUMID)<br>REC INHIBIT (>>REC INHI.) |
| | MOTOR CHECK (>Motor) | S-REEL (>>S-Reel)<br>T-REEL (>>T-Reel)<br>THREADING (>>Threading)<br>CASS-COMPARTMENT (>>Cass-COM)<br>CAPSTAN (>> Capstan)<br>DRUM (>>Drum)<br>REEL POSITION (>>Reel POS.) |
| | PLUNGER CHECK (>Plunger) | PINCH (>>Pinch)<br>REEL BRAKE (>>Brake)<br>M PLUNGER (>>M Plunger)<br>HEAD CLEANER (>>H. Cleaner) |
| SERVO ADJUST (SV Adjust) | S/T-REEL & CAPSTAN (>Reel & Cap.)<br>S-REEL ONLY (>S-Reel)<br>T-REEL ONLY (>T-Reel)<br>CAPSTAN ONLY (>Capstan)<br>TENSION (>Tension) | |
| TAPE PATH ADJUST (TP Adjust) | TRACKING ADJUST (>Tracking) | |
| | RF SWITCHING POSITION (>Switching) | |

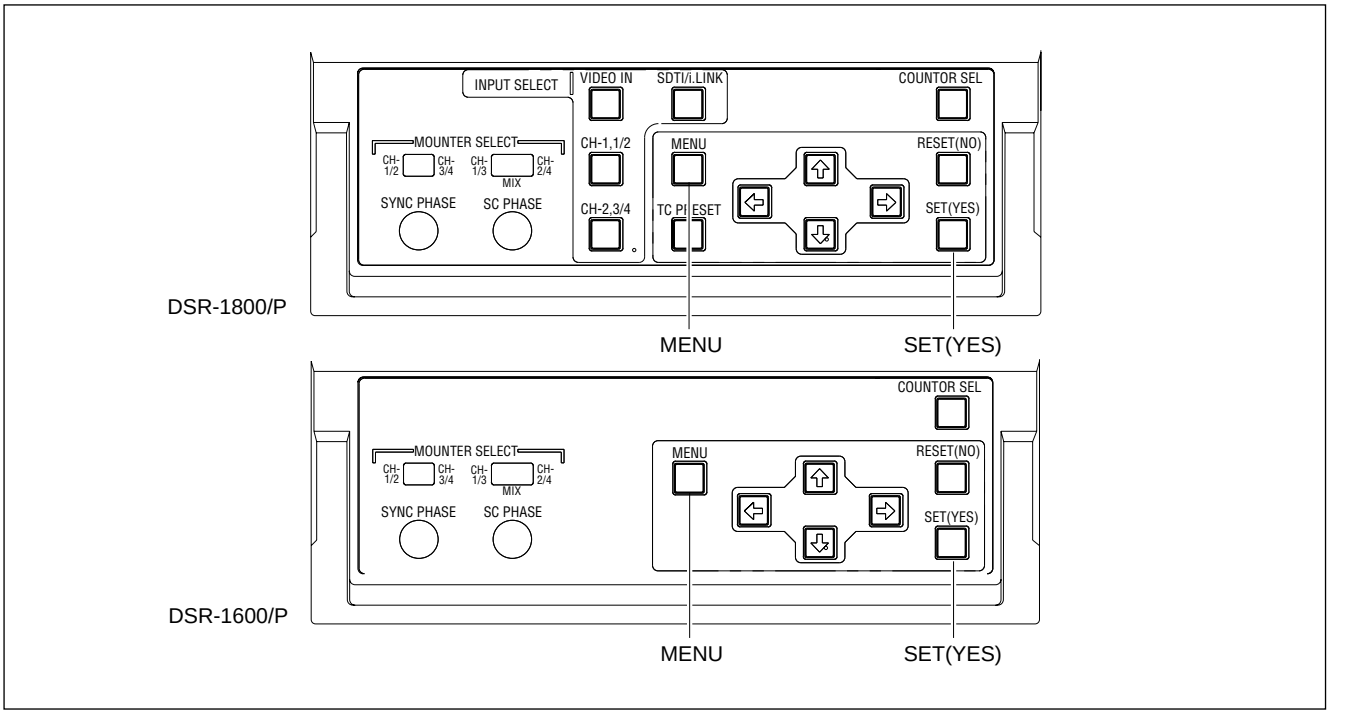
Values in parenthesis ( ) are time counter display.

| MENU, First layer | MENU, Second layer | MENU, Third layer |
|---|---|---|
| ELECTRICAL ADJUST (EL Adjust) | PLL F0 (>PLL f0) | |
| | EQ AUTO ADJ (>EQ auto) | DVCAM (>>DVCAM)<br>DV (>>DV)<br>DVPRO (>>DVPRO) |
| | EQ MANUAL ADJ (>EQ manual) | DVCAM (>>DVCAM)<br>DV (>>DV)<br>DVCPRO (>>DVCPRO) |
| | REC CURRENT (>REC cur)<br>FE CHECK (>FE check)<br>VOLUME ADJUST (>Vol adj) | |
| | PROCESS CHECK : OFF (>Proc check) | OFF (>>off)<br>DPR (>>dpr)<br>MAIN (>>main)<br>SUB (>>sub)<br>PRE (>>pre) |
| | REF CHECK : OFF (>REF check) | OFF (>>off)<br>NON-STD (>>Non-STD)<br>STD (>>STD) |
| | RP DATA INITIALIZE | |
| SERVICE SUPPORT (Support) | ERROR LOG (>Error LOG)<br>MANUAL EJECT (>Manu. Eject) | |
| | DIAGNOSTICS CONTROL (>DIAG CNT) | CLEAR ERROR LOG (>>Clear LOG) |
| OTHERS (Others) | SOFTWARE VERSION (>Version)<br>DSBK-1803 SERIAL NO (>DVIO NO)<br>KEYBOARD CHECK (>KY Check) | |
| | MEMORY DISPLAY (>MEM Check) | SY MEMORY DISPLAY (>> SY MEM.)<br>SV MEMORY DISPLAY (>> SV MEM.)<br>SP MEMORY DISPLAY (>> SP MEM.)<br>KY MEMORY DISPLAY (>> KY MEM.)<br>CM DISPLAY (>> CM DISP.) |
| | DATA DISPLAY (>Data Check) | SP DATA DISPLAY (>>SP DATA) |

# 5-2. How to Operate Maintenance Menu

## 5-2-1. Location and Function of Switches

Use MENU ←, →, ↑, ↓, SET (YES) switches on the control panel shown below to perform the maintenance menu. The maintenance menu has a layered structure through which you move to select the desired item.




↑ KEY : Use this key to move in the direction of ↑ within the same layer.
↓ KEY : Use this key to move in the direction of ↓ within the same layer.
← KEY : Use this key to move in the direction of ← to higher layers.
→ KEY : Use this key to move in the direction of → to lower layers. (It is inoperative if there is no lower layer.)

To indicate depth of layer, the displayed menu items are indented on the video monitor and ">" is added to the top on the time counter.

## 5-2-2. How to Enter the Maintenance Menu

1. While pressing the ← key, press the MENU key. The DSR-1800/P1600/P enters the maintenance menu. The maintenance menu appears on the video monitor.
2. Select the desired item using the ↑ key and the ↓ key. The cursor shown with a white background moves to the selected item.
3. After the desired item is selected, press the → key to designate the selected item.

## 5-2-3. How to Exit the Maintenance Menu

Press the MENU key to exit the maintenance menu.

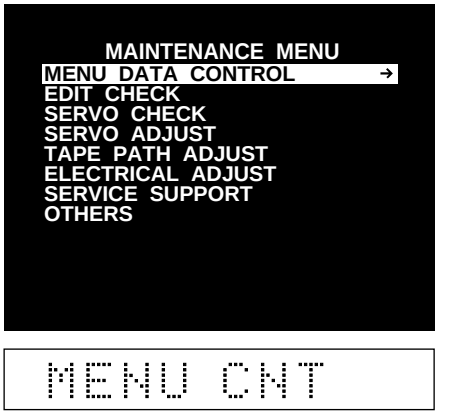
# 5-3. Contents of Maintenance Menu

## 5-3-1. Menu Data Control

The MENU DATA CONTROL item provides a SETUP MENU data display and saving and loading the SET UP MENU data.
This item is used to return the settings to their original values after maintenance is complete or ROM upgrading is complete.

### Operating procedure

1. Enter the maintenance menu.
2. Move the cursor to “MENU DATA CONTROL” which is displayed with a white background, using the [↑], [↓] keys.




3. Press the [→] key.
   “MENU DATA CONTROL” is selected and its lower layer submenu appears.

4. Move the cursor displayed with a white background to a desired item using the [↑], [↓] keys.
5. When an item is selected, press the [→] key. The contents of the selected item appear.
6. Press the [←] key to exit MENU DATA CONTROL and return to the main menu.
7. Press the [MENU] key to exit the maintenance menu.

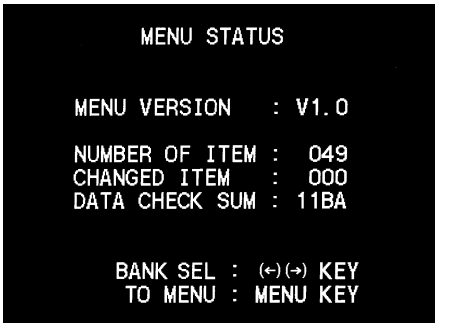
### (1) MENU STATUS DISPLAY

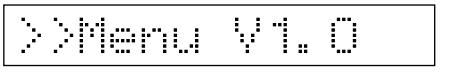
Displays the current status of the SET UP MENU data.

MENU VERSION : Version number of the SET UP MENU
NUMBER OF ITEM : Numbers of the SET UP MENU items
CHANGED ITEM : Numbers of the items which were changed from the factory default settings
DATA CHECK SUM : Data check sum

Pressing [→] key displays the status of the SET UP MENU stored in the menu bank 1 to 4.

* Pressing the [MENU] key returns to the main menu.

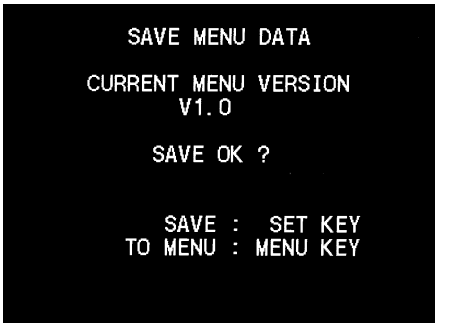


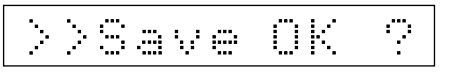




### (2) SAVE MENU DATA

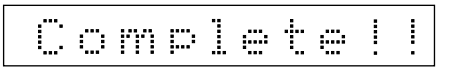
This is used to temporarily save the user's setup menu data. A temporary saved data can be reset later.

1. The version of the current setup menu is displayed, and it is waiting to press the [SET (YES)] key.
   * Pressing the [MENU] key returns to the main menu.




2. Press the [SET (YES)] key.
   The SET UP MENU data is stored in EEPROM.
   Confirm that [COMPLETE] appears and data saving is complete.



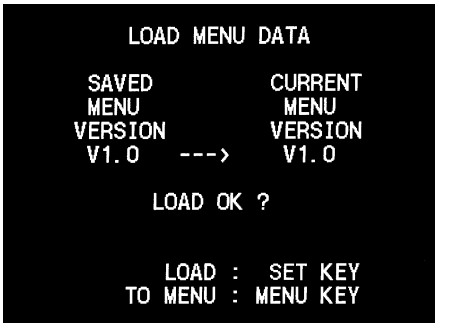

**Notes**

- Data which has once been saved will not be deleted by turning the main power on and off, or by upgrading the ROM version. However, the saved data is deleted when the DR-428 board or the EEPROM is replaced because the data is saved in the EEPROM in the DR-428 board.
- When the SET UP MENU is upgraded by ROM's version upgrade, an alarm message appears after the ROM is replaced. Either initialize the SET UP MENU or execute "LOAD MENU DATA" when the alarm appears.

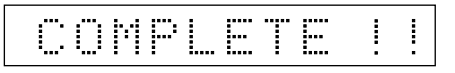
### (3) LOAD MENU DATA

The saved data is stored as ordinary SET UP MENU data when it is loaded.

1. The version number of the current SET UP MENU and that of the SET UP MENU to be loaded are displayed, and it is waiting to press the SET (YES) key.
   * Pressing the MENU key returns to the main menu.



2. Press the SET (YES) key.
   The SET UP MENU data is stored in EEPROM.
   Confirm that [COMPLETE] appears and data saving is complete.
   * Pressing the MENU key returns to the main menu.




**In the case of trouble :**

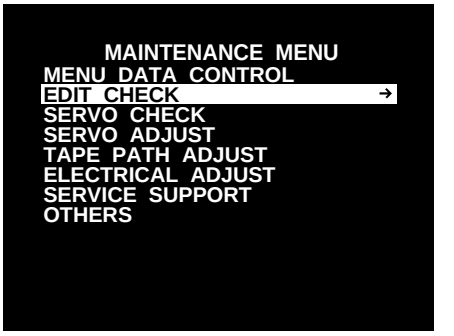
Loading of the data will not start if SET UP MENU data has not been saved or the saved SET UP MENU data contains an error.

## 5-3-2. EDIT CHECK (DSR-1800/P)

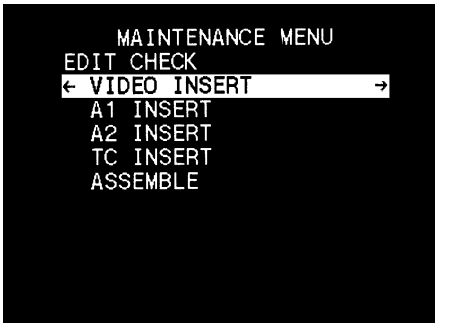
Enables the editing function to be checked without using a remote controller.

### Operating procedure

1. Enter the maintenance menu.
2. Move the cursor to “EDIT CHECK” which is displayed with a white background using the [↑], [↓] keys.



3. Press the [→] key.
   “EDIT CHECK” is selected and its lower layer submenu appears.



4. Move the cursor displayed with a white background to a desired item using the [↑], [↓] keys.
5. When an item is selected, press the [→] key. The contents of the selected item appear.
6. Press the [←] key to exit EDIT CHECK and return to the main menu.
7. Press the [MENU] key to exit the maintenance menu.

Enables the MANUAL EDIT by selecting each mode.

VIDEO INSERT

Pressing the REC and PLAY keys simultaneously enters the VIDEO INSERT mode.

A1 INSERT

Pressing the REC and PLAY keys simultaneously enters the AUDIO CH-1 INSERT mode.

A2 INSERT

Pressing the REC and PLAY keys simultaneously enters the AUDIO CH-2 INSERT mode.

TC INSERT

Pressing the REC and PLAY keys simultaneously enters the TIME CODE INSERT mode.

ASSEMBLE

Pressing the REC and PLAY keys simultaneously enters the ASSEMBLE mode.

**Note**

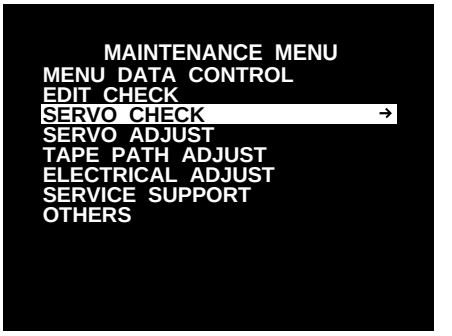
When the AUDIO REC MODE is set to 4 channel, A1 and A2 are assigned to channels 1, 2, 3 and 4 in accordance with the A1 EDIT CH and A2 EDIT CH of the setup menu.

## 5-3-3. Servo Check

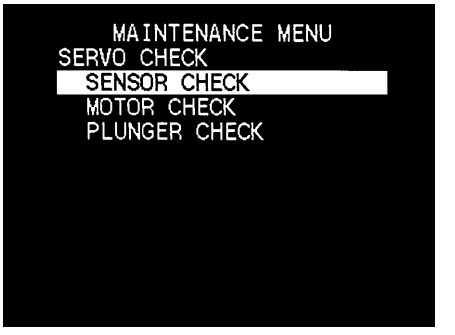
Checks the servo system automatically or semi-automatically.

### Operating procedure

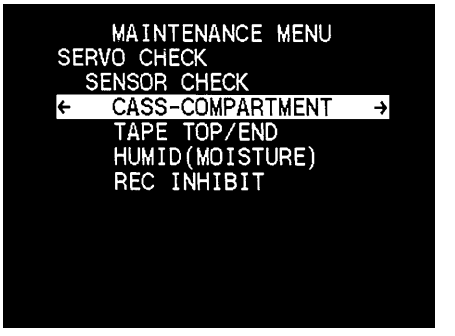
1. Enter the maintenance menu.
2. Move the cursor to “SERVO CHECK” which is displayed with a white background using the [↑], [↓] keys.



3. Press the [→] key.
   “SERVO CHECK” is selected and its lower layer submenu appears.
4. Move the cursor displayed with a white background to a desired item using the [↑], [↓] keys.



5. Press the [→] key.
   The lower layer submenu appears.
6. Move the cursor displayed with a white background to a desired item using the [↑], [↓] keys.
7. Press the [→] key to select the desired item.
8. Press the [SET (YES)] key to execute the selected item.
9. After completing the check, press the [MENU] key to return to the main menu.
10. To check other menus and submenus, repeat steps 4 to 9.
11. Press the [MENU] key to exit the maintenance menu.



**Note**

If the [MENU] key is pressed while the check is in progress, the check operation is forcibly ended and the display returns to the main menu.

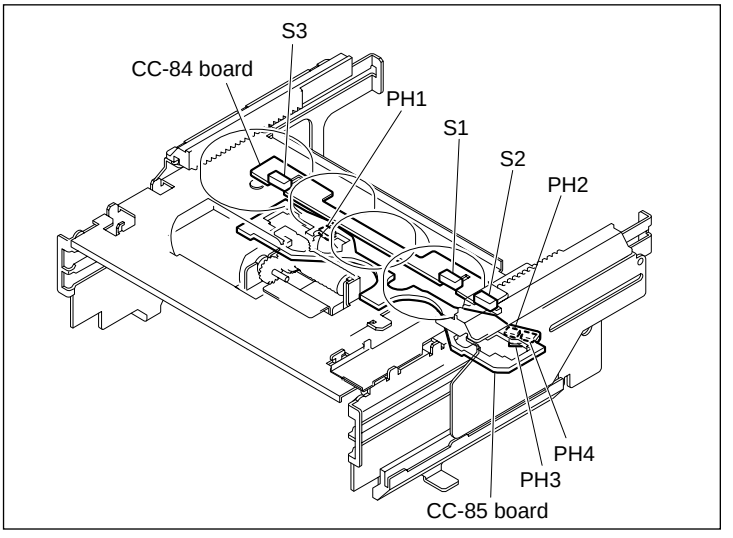
## 1. SENSOR CHECK

The respective items of “SENSOR CHECK” are described below :

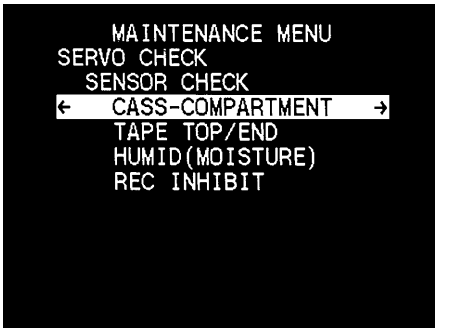
### ① CASS-COMPARTMENT

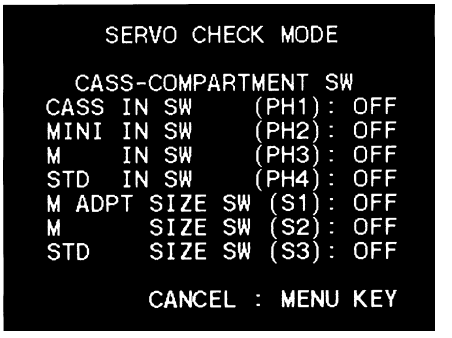
Checks the respective switches of the cassette compartment.

| SW/Sensor | Applicable board |
|---|---|
| PH1<br>PH2<br>PH3<br>PH4 | CC-85 |
| S1<br>S2<br>S3 | CC-84 |




1. Execute the CASS-COMPARTMENT.
2. Confirm that the sensors are all OFF with no cassette inserted.




SERVO CHECK MODE
CASS-COMPARTMENT SW
CASS IN SW (PH1): OFF
MINI IN SW (PH2): OFF
M IN SW (PH3): OFF
STD IN SW (PH4): OFF
M ADPT SIZE SW (S1): OFF
M SIZE SW (S2): OFF
STD SIZE SW (S3): OFF
CANCEL : MENU KEY

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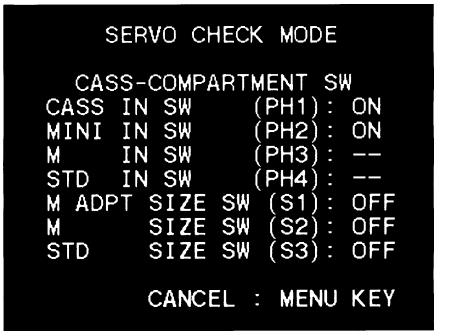
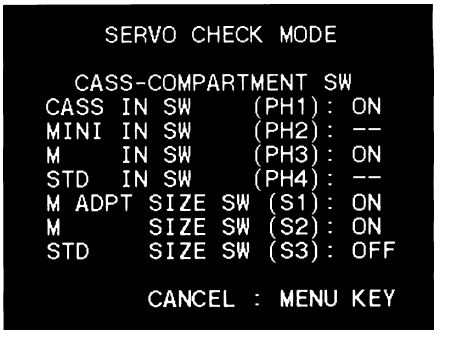
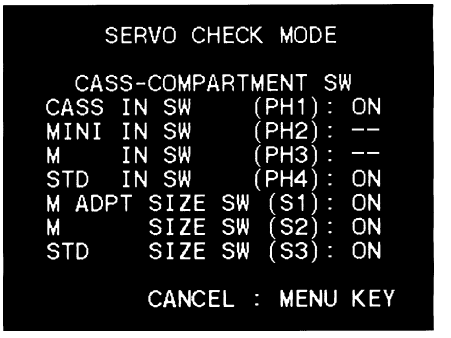
3. Insert the mini-cassette and confirm that the status of the sensor is the monitor display shown right.


SERVO CHECK MODE
CASS-COMPARTMENT SW
CASS IN SW (PH1): ON
MINI IN SW (PH2): ON
M IN SW (PH3): --
STD IN SW (PH4): --
M ADPT SIZE SW (S1): OFF
M SIZE SW (S2): OFF
STD SIZE SW (S3): OFF
CANCEL : MENU KEY

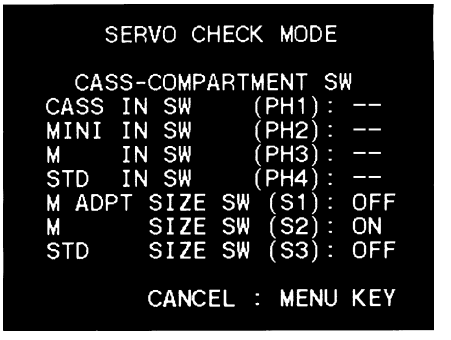
4. Insert the M-cassette and confirm that the status of the sensor is the monitor display shown right.


SERVO CHECK MODE
CASS-COMPARTMENT SW
CASS IN SW (PH1): ON
MINI IN SW (PH2): --
M IN SW (PH3): ON
STD IN SW (PH4): --
M ADPT SIZE SW (S1): ON
M SIZE SW (S2): ON
STD SIZE SW (S3): OFF
CANCEL : MENU KEY

5. Insert the standard cassette and confirm that the status of the sensor is the monitor display shown right.


SERVO CHECK MODE
CASS-COMPARTMENT SW
CASS IN SW (PH1): ON
MINI IN SW (PH2): --
M IN SW (PH3): --
STD IN SW (PH4): ON
M ADPT SIZE SW (S1): ON
M SIZE SW (S2): ON
STD SIZE SW (S3): ON
CANCEL : MENU KEY

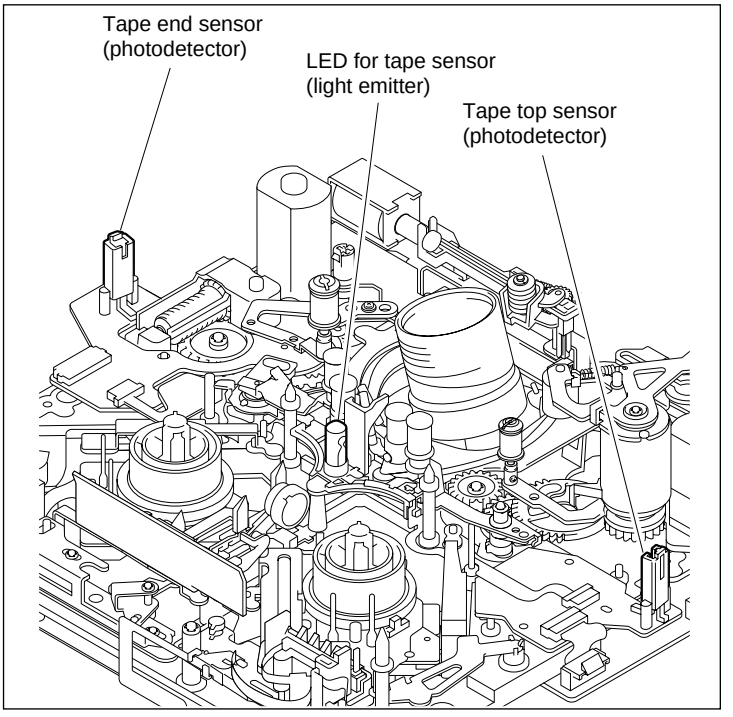
6. Insert the M-ADPT (Cassette adaptor for DVCPRO) and confirm that the status of the sensor is the monitor display shown right.

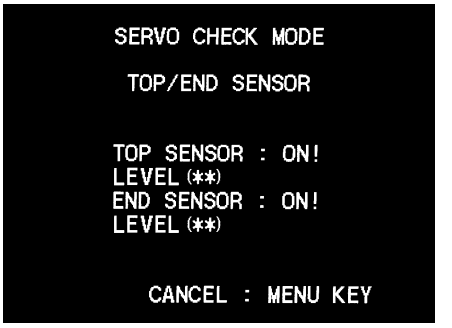

SERVO CHECK MODE
CASS-COMPARTMENT SW
CASS IN SW (PH1): --
MINI IN SW (PH2): --
M IN SW (PH3): --
STD IN SW (PH4): --
M ADPT SIZE SW (S1): OFF
M SIZE SW (S2): ON
STD SIZE SW (S3): OFF
CANCEL : MENU KEY

∗ − − : not care

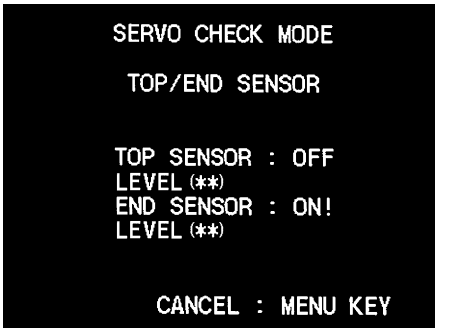
## ② TAPE TOP/END

Checks the tape-top and tape-end sensors.

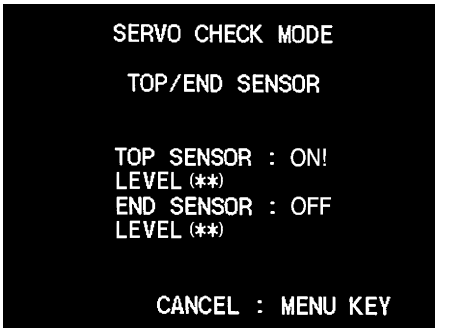


1. Execute the TAPE TOP/END.
2. Confirm that both TOP SENSOR and END SENSOR are [ON!].
3. Interrupt between the LED for the tape sensor (light emitter) and the tape-top sensor (photodetector) by inserting a finger or the like.
   Confirm that the TOP SENSOR display changes from [ON!] to [OFF] on the monitor display.




4. Interrupt between the LED for the tape sensor (light emitter) and the tape-end sensor (photodetector) by inserting a finger or the like.
   Confirm that the END SENSOR display changes from [ON!] to [OFF] on the monitor display.

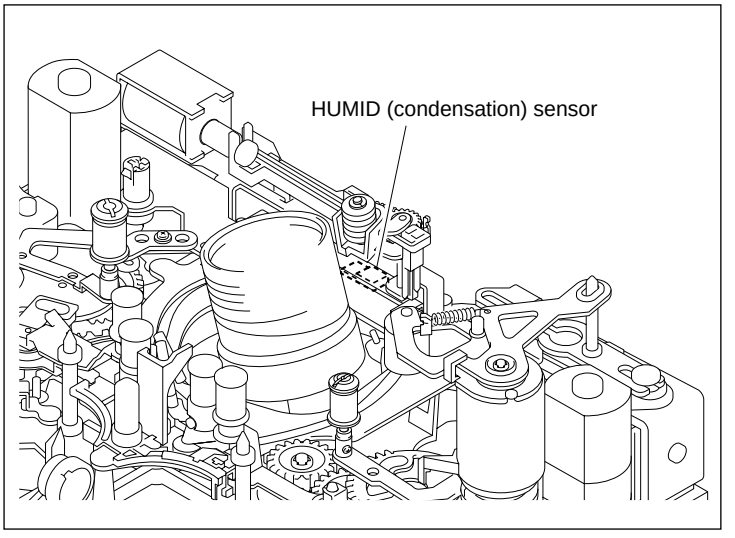



**In the case of trouble :**

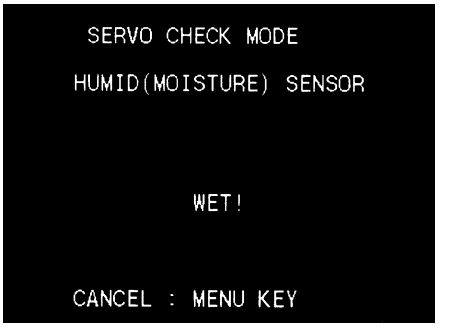
If the display does not change check whether the tape-top sensor or the tape-end sensor itself is defective.
Check also the tape-top/tape-end sensor circuit (DR-428, SE-521/522 board).

### ③ HUMID (MOISTURE)

Checks the HUMID (condensation) sensor.



1. Execute the HUMID (MOISTURE).
2. Bring a cotton swab moistened with water in contact with the HUMID sensor.
   Confirm that [DRY] changes to [WET!] on the monitor display.




3. Blow wind onto the HUMID sensor to evaporate any water.
   Confirm that the display changes to [DRY] on the monitor 30 minutes later.

   **Note**

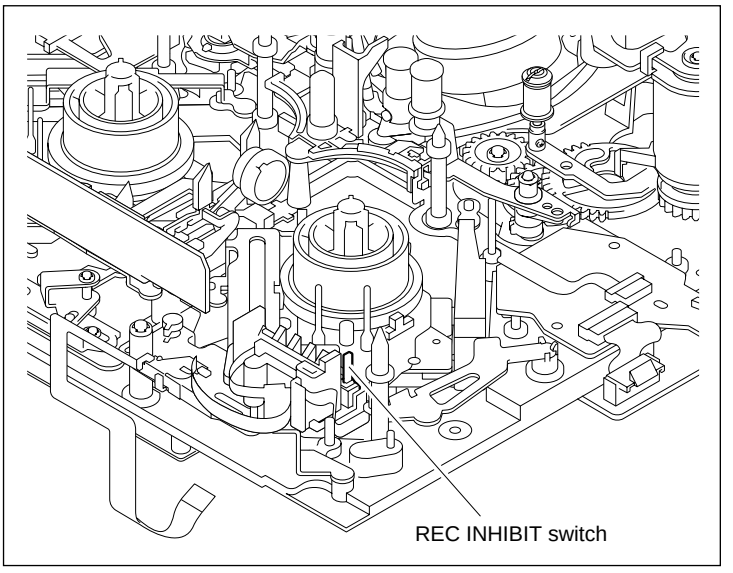
   Once the HUMID sensor detects [WET!], even if make it dry immediately, it takes 30 minutes to detect [DRY].

**In the case of trouble :**

If the display does not change from DRY to WET!, check whether the HUMID sensor itself is defective.
Check also the HUMID sensor amplifier (DR-428 board).

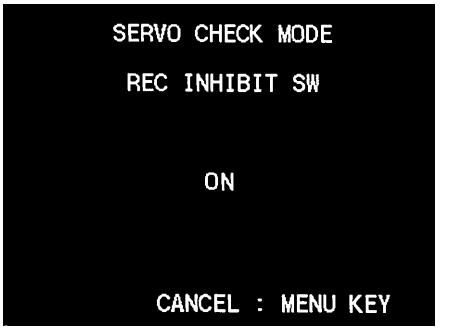
### ④ REC INHIBIT

Checks the REC INHIBIT switch.




1. Execute the REC INHIBIT.
2. Confirm the monitor display is as shown right.

3. Press the REC INHIBIT switch.
   Confirm that ON is displayed on the monitor display.

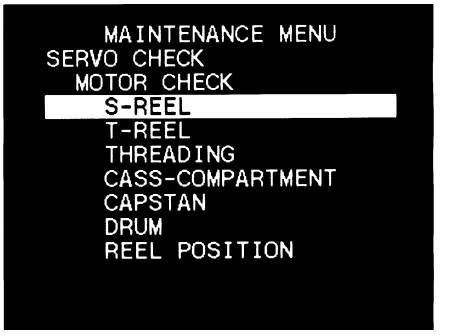



**In the case of trouble :**

If OFF is not displayed, check the sensor on the MIC arm.

## 2. MOTOR CHECK

The respective items of “MOTOR CHECK” are described below :



### ① S-REEL

Checks the S-reel motor.

1. Execute the S-REEL.
2. Press and hold the [↑], then [↓] keys for one to two seconds, and release the reel brake by activating the brake solenoid. Confirm that the S reel motor rotates clockwise and counter-clockwise respectively during pressing the [↑] key and [↓] key.

**In the case of trouble :**
If the brake solenoid does not emit the operating sound and the S reel motor does not rotate in the specified direction even though pressing the [↑] and [↓] keys, check the S reel motor assembly and reel motor driver circuit (DR-428 board).

### ② T-REEL

Checks the T-reel motor.

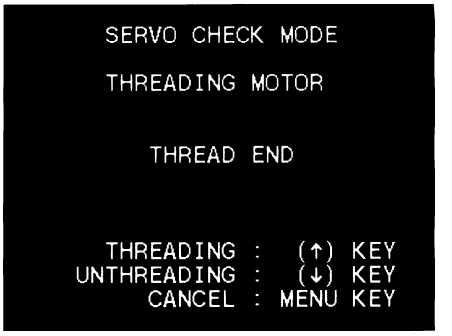
1. Execute the T-REEL.
2. Press and hold the [↑], then [↓] keys for one to two seconds, and release the reel brake by activating the brake solenoid. Confirm that the T reel motor rotates clockwise and counter-clockwise respectively during pressing the [↑] key and [↓] key.

**In the case of trouble :**
If the brake solenoid does not emit the operating sound and the T reel motor does not rotate in the specified direction even though pressing the [↑] and [↓] keys, check the T reel motor assembly and reel motor driver circuit (DR-428 board).

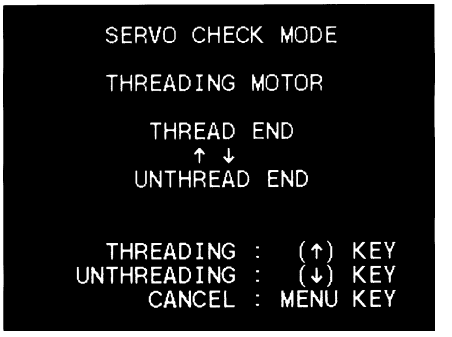
## ③ THREADING

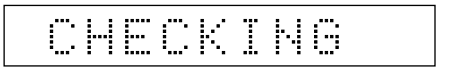
Checks the threading motor, the thread-end sensor, unthread-end sensor and the cassette compartment.

1. Execute the THREADING.

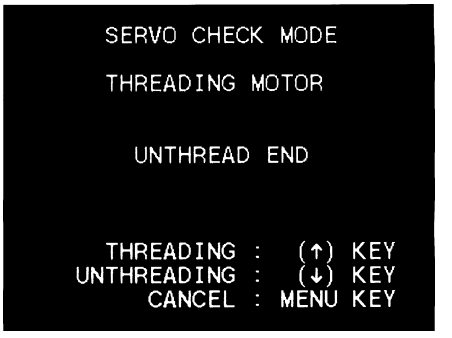


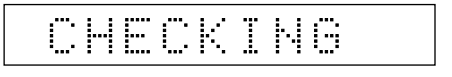
2. Press and hold the [↑] key.
   Confirm that the threading ring completes threading and the message “THREAD END” appears on the monitor display.




3. Press and hold the [↓] key.
   Confirm that the threading ring completes unthreading and “UNTHREAD END” appears on the monitor display.



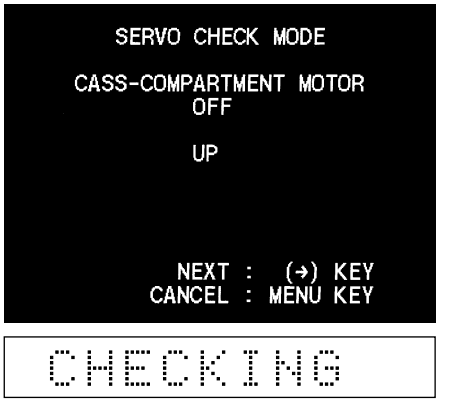

**In the case of trouble :**

If the threading motor does not rotate, or if the message “THREAD END” does not appear even though threading is complete, or if the message “UNTHREAD END” does not appear on the monitor even though the unthreading is complete, check the threading motor, the cassette compartment, the SSP-24 (DSR-1800/P)/SSP-23 board (DSR-1600/P). Check also the DR-428 board (the driver circuit and the threading FG amplifier circuit) and the SE-512 board (the sensor).

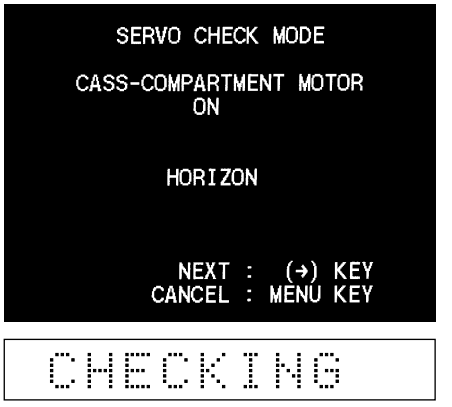
## ④ CASS-COMPARTMENT

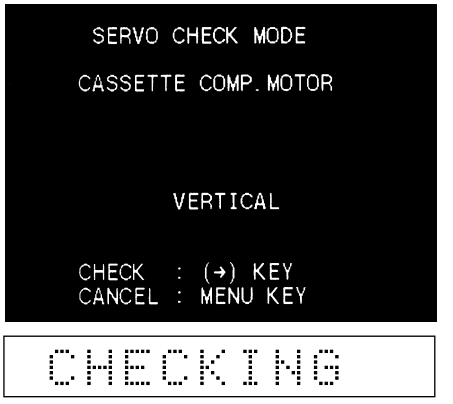
Check the cassette compartment motor.

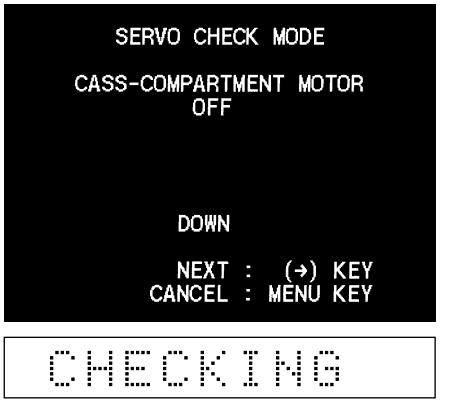
1. Execute the CASS-COMPARTMENT.




2. Press the [→] key.
   Confirm that the cassette compartment moves down.
3. Press the [→] key again, and confirm that the cassette compartment moves up.
   (The monitor display changes in the reverse order of the steps for moving down the cassette compartment.)




**In the case of trouble :**
If the monitor display does not change, check the cassette compartment motor, the SSP-24 (DSR-1800/P)/SSP-23 board (DSR-1600/P) (the sensor input circuit) and the CC-83 board (the sensor).

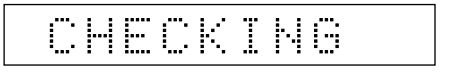
## ⑤ CAPSTAN

Checks the capstan motor.

1. Execute the CAPSTAN.

2. Press the [→] key.
   Confirm that [FORWARD ... OK] appears on the monitor display.

3. Press the [→] key again.
   Confirm that [REVERSE ... OK] appears on the monitor display.

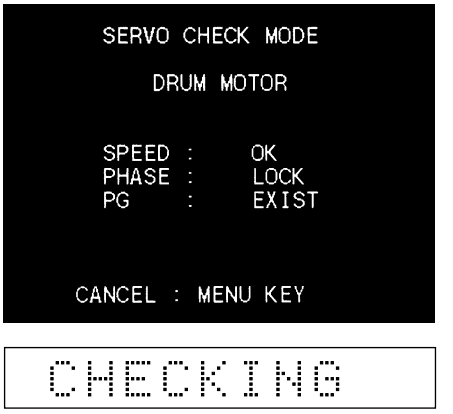



**In the case of trouble :**
If the monitor display does not change, check the capstan motor and the capstan motor driver circuits (the DR-428 board).

### ⑥ DRUM

Checks the drum motor.

1. Execute the DRUM.
2. Confirm the monitor display is as follows.
   SPEED : [OK]
   PHASE : [LOCK]
   PG : [EXIST]







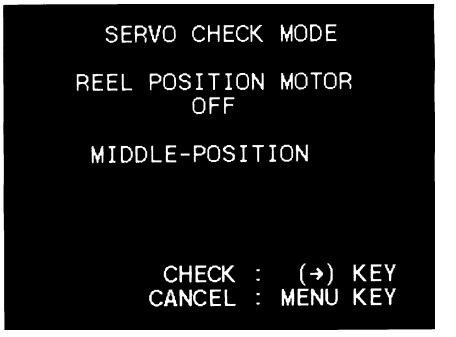
**In the case of trouble :**
If the monitor display does not change, check the drum motor, the DR-428 board (the drum motor driver circuit, the drum FG amp circuit and the drum PG amp circuit).

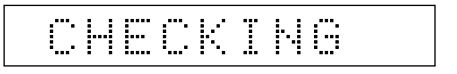
### ⑦ REEL POSITION

Checks the reel position motor and the reel MINI/M/STD position sensor.

1. Execute the REEL POSITION.

2. Confirm that the reel table moves in the order of the MINI position → the M position → the STD position then returning to the MINI position each time pressing the [→] key and the monitor display changes in accordance with the move.



**In the case of trouble :**

If the reel table does not move or the monitor display does not change, check the reel position motor, the reel MINI/M/STD position sensor (the SE-522 and DR-428 boards) and reel position motor driver circuit (the DR-428 board).

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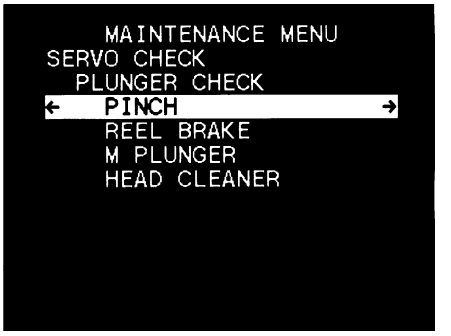
## 3. PLUNGER CHECK

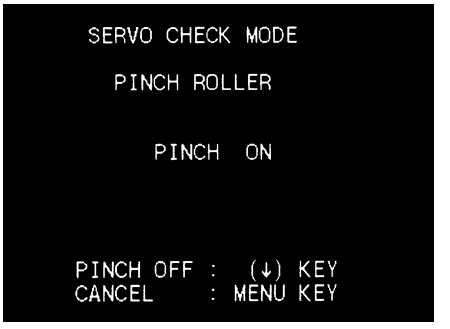
The respective items of “PLUNGER CHECK” are described below.

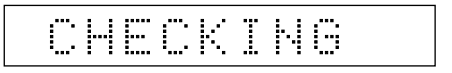


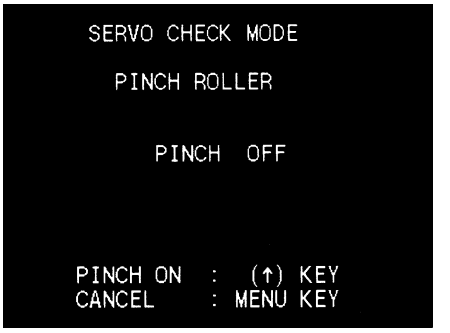
### ① PINCH

Checks the pinch roller solenoid.

1. Execute the PINCH and confirm that the pinch solenoid operates when the threading starts.
2. Press the [↑] and [↓] keys to confirm that the PINCH comes to ON/OFF.
3. Press the [MENU] key to release the pinch solenoid and to bring to the unthreading.
   Doing so, the monitor display returns to the main menu.



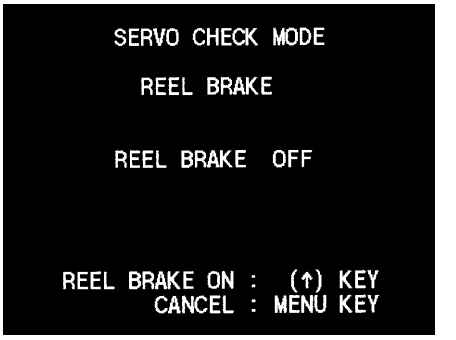

**In the case of trouble :**

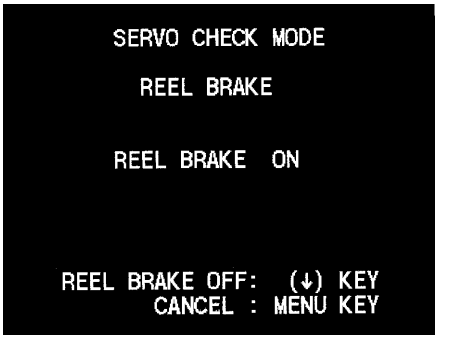
If the pinch solenoid does not operate, check the pinch solenoid and the driver circuit (the DR-428 board).

### ② REEL BRAKE

Checks the reel brake solenoid.

1. Execute the REEL BRAKE and confirm that the reel brake solenoid operates.
2. Press the [↑] and [↓] keys to confirm that the REEL BRAKE comes to ON/OFF.
3. Press the [MENU] key to release the reel brake solenoid. Doing so, the monitor display returns to the main menu.



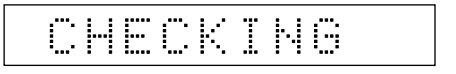



**In the case of trouble :**
If the reel brake solenoid does not operate, check the reel brake solenoid and its driver circuit (the DR-428 board).

### ③ M PLUNGER

Checks the M plunger solenoid.

1. Power off the unit, and remove the flexible card wire from the cassette compartment.
2. Power on the unit, and enter the maintenance menu.
   **Note**
   Be cureful not to contact the tip of flexible card wire with the chassis, when the power on the unit.
3. Execute the M PLUNGER.
4. Press the [↑] and [↓] keys to confirm that the M PLUNGER comes to ON/OFF.
5. Press the [MENU] key to release the M plunger solenoid. Doing so, the monitor display returns to the main menu.
6. Power off the unit, and connect the flexible card wire to cassette compartment.



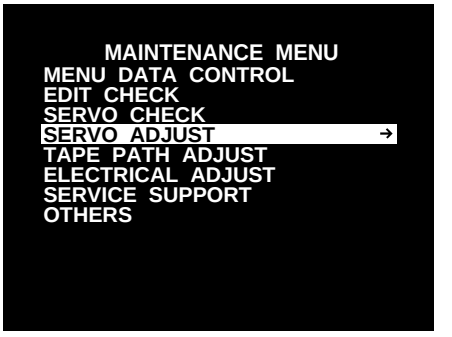
**In the case of trouble :**
If the M plunger solenoid does not operate, check the M plunger solenoid and its driver circuit (the DR-428 board).

## 5-3-4. Servo Adjust

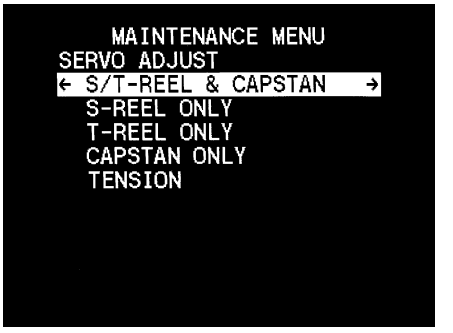
Checks the servo system automatically or semi-automatically.

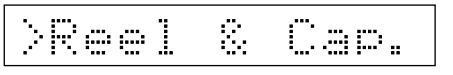
### Operating procedure

1. Enter the maintenance menu.
2. Move the cursor to “SERVO ADJUST” which is displayed with a white background using the [↑], [↓] keys.



3. Press the [→] key.
   “SERVO ADJUST” is selected and its lower-layer submenu appears.




4. Move the cursor displayed with a white background to a desired item using the [↑], [↓] keys.
5. Press the [→] key to select the desired item.
   (Refer to the respective menu description for the adjustment procedure.)
6. Press the [SET (YES)] key to execute the selected menu.
7. After completing the adjustment, press the [←] key to return to the main menu.
8. To check other menus and submenus, repeat steps 4 to 7.
9. Press the [MENU] key to exit the maintenance menu.

**Note**

If the [MENU] key is pressed while the adjustment is in progress, the adjustment operation is forcibly ended and the display returns to the main menu.

### (1) S/T REEL & CAPSTAN

Executes the automatic adjustment of the S and T reels and, capstan systems.

1. Execute the S/T REEL & CAPSTAN.
2. After completing adjustment, confirm that “COMPLETE” appears.

**Adjustment items**

s reel fg adjust
s reel offset/friction
s reel torque
t reel fg adjust
t reel offset /friction
t reel torque
capstan fg adjust

**In the case of trouble :**

When “ADJUST INCOMPLETE” appears on the monitor display, check the SSP-23 and DR-428 boards (the reeel FG amplifier circuit, reel motor driver circuit, capstan FG circuit and motor driver cicuit) Check also the respective motors.

### (2) S-REEL ONLY

Executes the automatic adjustment of the S reel only.

1. Execute the S-REEL ONLY.
2. After completing adjustment, confirm that “COMPLETE” appears.

**Adjustment items**

s reel fg adjust
s reel offset/friction
s reel torque

**In the case of trouble :**

When “ADJUST INCOMPLETE” appears on the monitor display, check the DR-428 board (the reel FG amplifier circuit, the reel motor driver circuit) and the S-reel motor.

### (3) T-REEL ONLY

Executes the automatic adjustment of the T reel only.

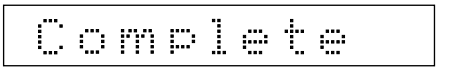
1. Execute the T-REEL ONLY.
2. After completing adjustment, confirm that “COMPLETE” appears.

**Adjustment items**
t reel fg adjust
t reel offset/friction
t reel torque

**In the case of trouble :**
When “ADJUST INCOMPLETE” appears on the monitor display, check the DR-428 board (the reel FG amplifier circuit, the reel motor driver circuit) and the T-reel motor.

### (4) CAPSTAN ONLY

Executes the automatic adjustment of the capstan FG only.




1. Execute the CAPSTAN ONLY.
2. After completing adjustment, confirm that “COMPLETE” appears.

**Adjustment item**
capstan fg adjust

**In the case of trouble :**
When “ADJUST INCOMPLETE” appears on monitor display, check the DR-428 board (the capstan motor driver circuit, the capstan FG amplifier circuit) and the capstan motor.

### (5) TENSION

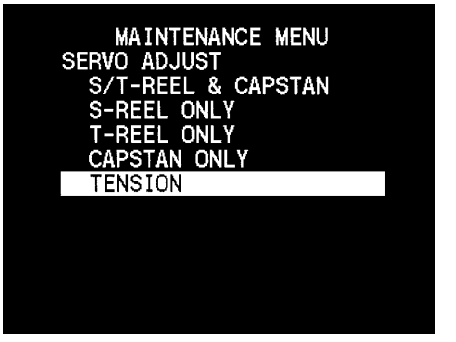
Executes the adjustment of the tape tension.

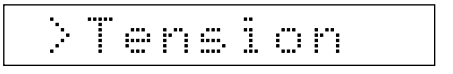
**Mode**
PLAY mode

**Tools**
DV torque cassette : J-6082-373-A

1. Remove the cassette compartment.
2. Turn on the main power and press the [EJECT] key.
   **Note**
   Make sure that the cassette compartment connection cable is not shorted to chassis when the main power is turned on.

3. Enter “MAINTENANCE MENU” and select “TENSION” from “SERVO ADJUST” using the [↑], [↓] keys.
4. Press the [→] key to move to the next display.




5. When the display appears, press the [SET (YES)] key to start the adjustment.

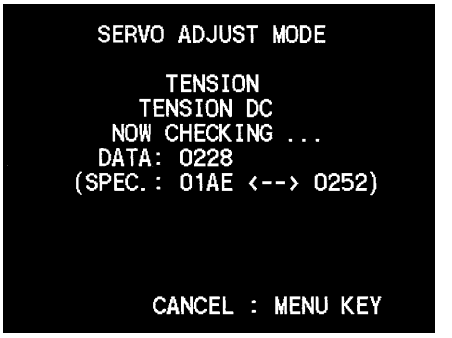
6. Wait until display changes and the menu appears as shown in the right.

7. Set the DV torque cassette and place a weight of about 300 g on it. Press the [STOP] key.

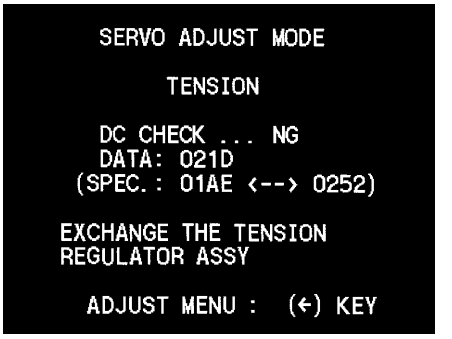
8. Keep pressing the [↑], [↓] keys until the DV torque cassette reading agrees with the specification value on display.
9. When adjustment is completed, press the [→] key.

Specification is as indicated on the display.

10. The display changes as shown in the right, and the DSR-1800/P/1600/P enters the tension regulator magnet position check mode.




11. If the check is completed unsatisfactorily, the display changes as shown in the right.
12. Replace the tension regulator assembly in accordance with message on the display.




13. If the check is completed satisfactorily, the display changes as shown in the right.
14. Keep pressing the [↑], [↓] keys until the DV torque cassette reading agrees with the specification value on the display.
15. When adjustment is completed, press the [→] key.
16. Repeat steps 14 and 15 to readjust the DV torque cassette reading.

Specification is as indicated on the display.

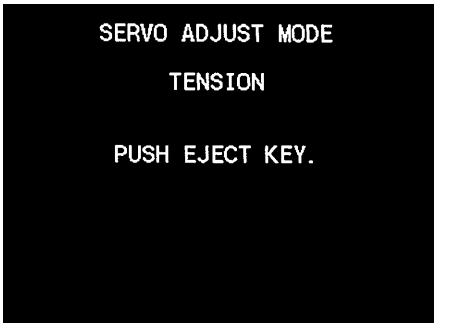
17. Confirm that the DV torque cassette reading agrees with the specification value on the display.
18. After completing step 17, press the [→] key and the DSR-1800/P/1600/P enters the REV mode automatically.

Specification is as indicated on the display.

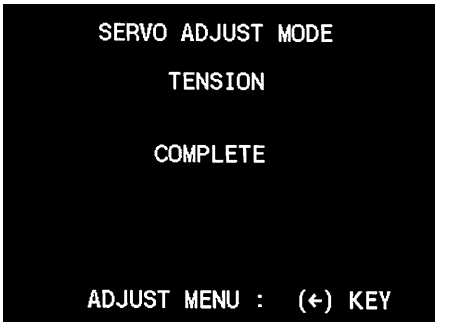
18. Keep pressing the [↑], [↓] keys until the DV torque cassette reading agrees with the specification value on the display.
19. When adjustment is completed, press the [→] key.

Specification is as indicated on the display.

20. Press the [EJECT] key and remove the DV torque cassette.




21. Confirm that the message “COMPLETE” appears on the display.



* Press the [EJECT] key to return to the ADJUST menu.
* When adjustment is complete, attach the cassette compartment.

## 5-3-5. Tape Path Adjust

Executes the adjustment of the tape path.

### (1) TRACKING ADJUST

For adjustment of “TRACKING ADJUST”, refer to section 8-2.

### (2) RF SWITCHING POSITION

For adjustment of “RF SWITCHING POSITION”, refer to section 8-3.

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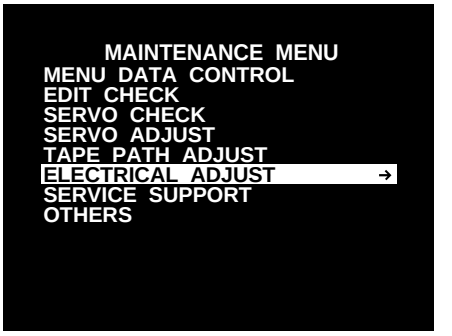
## 5-3-6. Electrical Adjust

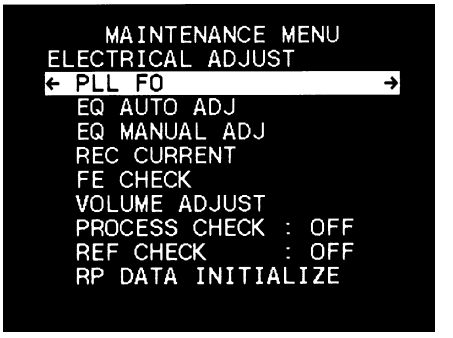
Executes the electrical adjustment.

### Operating procedure

1. Enter the maintenance menu.
2. Move the cursor to “ELECTRICAL ADJUST” which is displayed with a white background using the [↑], [↓] keys.



3. Press the [←] key.
   “ELECTRICAL ADJUST” is selected and its lower-layer submenu appears.



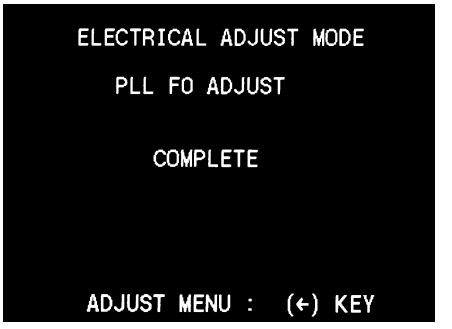
4. Move the cursor displayed with a white background to a desired item using the [↑] and [↓] keys.
5. Press the [→] key to select the desired item.

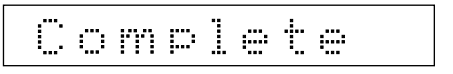
## 1. PLL F0

The PLL adjustment is described below :

1. Select “PLL F0” and the PLL adjustment is performed automatically.

2. After completing the adjustment, confirm that “COMPLETE” appears.
3. Press the [←] key to return to the ADJUST menu.
4. Press the [MENU] key to exit the maintenance menu.



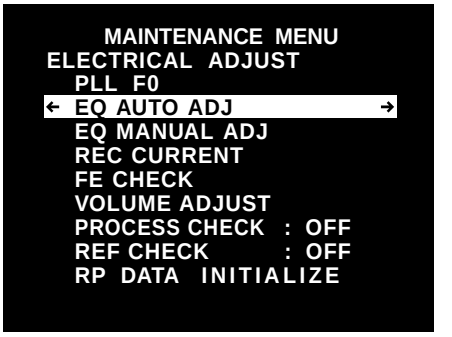

**In the case of trouble :**
If “INCOMPLETE” appears on the monitor display, check the RP-120 board (DSR-1800/P)/PRE-45 board (DSR-1600/P) (the PLL circuit).

## 2. EQ AUTO ADJ

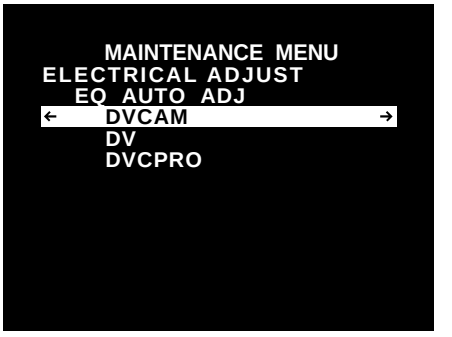
The EQ AUTO adjustment is described below:

### ① DVCAM

1. Select the EQ AUTO ADJ.




2. Move the cursor displayed with a white background to the DVCAM using the [↑] and [↓] keys and press the [→] key.




3. After the monitor display comes out as shown right, insert the XH5-1A2 (for NTSC) or XH5-1AP2 (for PAL) into the unit.
4. Press the [PLAY] key.
5. Confirm "COMPLETE" is displayed on the monitor.

To return to step 2, press the [←] key once.
To return to step 1, press the [←] key twice.
To return to the main menu, press the [←] key three times.

**In the case of trouble :**

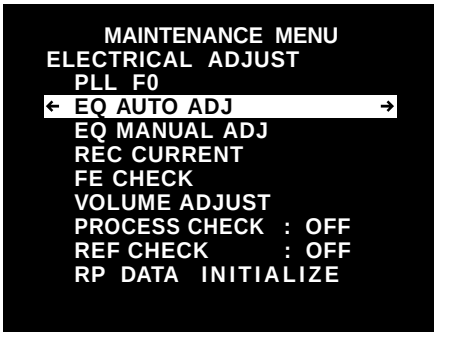
If "INCOMLETE" is displayed on the monitor;

① Send the small length of the tape forward and repeat step 2 again.

② If "INCOMLETE" is still displayed after performing ①, check the RP-120 board (DSR-1800/P)/PRE-45 board (DSR-1600/P) (the EQ circuit).

### ② DV

1. Select the EQ AUTO ADJ.




2. Move the cursor displayed with a white background to the DV using the [↑] and [↓] keys and press the [→] key.

3. After the monitor display comes out as shown right, insert the XH4-1A into the unit.
4. Press the [PLAY] key.
5. Confirm “COMPLETE” is displayed on the monitor.

To return to step 2, press the [←] key once.
To return to step 1, press the [←] key twice.
To return to the main menu, press the [←] key three times.

### ③ DVCPRO

This menu is for the factory use.

**In the case of trouble :**

If “INCOMLETE” is displayed on the monitor;

① Send the small length of the tape forward and repeat step 2 again.
② If “INCOMLETE” is still displayed after performing ①, check the RP-120 board (DSR-1800/P)/PRE-45 board (DSR-1600/P) (the EQ circuit).

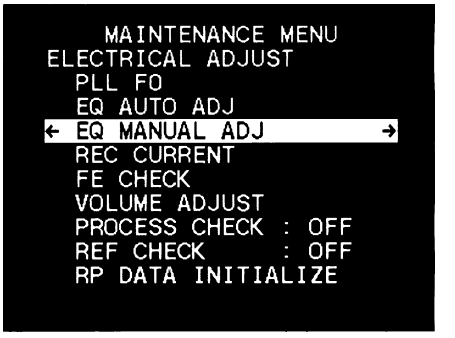
### 3. EQ MANUAL ADJ

The EQ MANUAL ADJUSTMENT is described below:

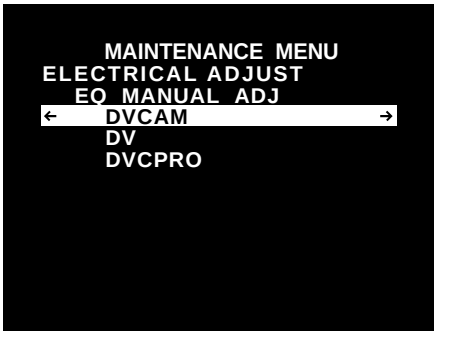
**Reference**

If any errors are found in the played back picture and audio, or if "INCOMPLETE" is displayed after completing the EQ AUTO ADJ in the previous section, this adjustment enables to check the status of the RF of each HEAD.

1. Select the EQ MANUAL ADJ.




2. Select the mode desired to check using the [↑] and [↓] keys, and press the [→] key.
3. Insert the cassette of which mode you desire to check into the unit.
   DVCAM : 15 µ ADJ cassette
   DV : 10 µ ADJ cassette
   DVCPRO : Factory use




4. Press the [PLAY] key.
5. Press the [PESET (NO)] key to display asterisk mark "∗" to the right side of the DATA: 0000.
6. Select the HEAD for checking with the [→] key.

   **Reference**

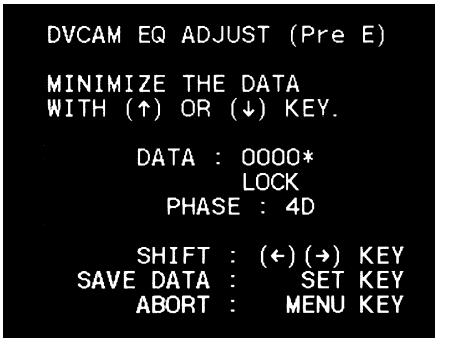
   The HEAD selected is displayed in the ( ) on the top of the monitor display.

   **In the case of DVCAM :**

   Pre E → Pre O → Main E → Main O → Rec E → Rec O

   **In the case of DV/DVCPRO :**

   Main E → Main O



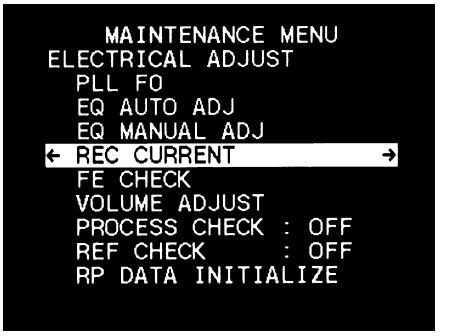

7. Confirm that the DATA on the screen is 0000∗ through 000F∗.
8. Pressing the [MENU] key return to the main menu.

   **Note**

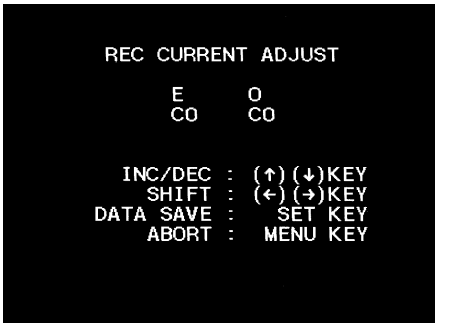
   If press the [SET (YES)] key during confirmation, perform the EQ AUTO adjustment.5

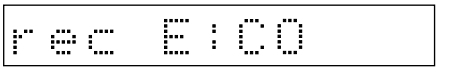
## 4. REC CURRENT

1. Selected the REC CURRENT.



2. Press the [↑], [↓] keys and the [←], [→] keys to adjust the data to “C0”.



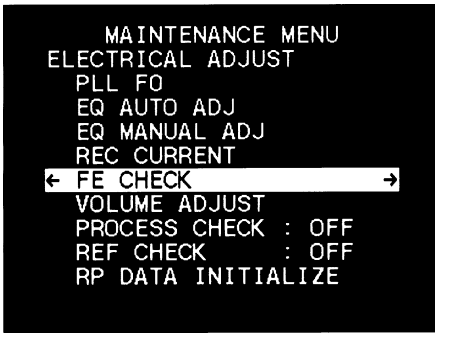




or

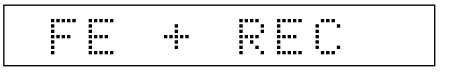
3. Press the [SET (YES)] key to save the data.

## 5. FE CHECK (DSR-1800/P only)

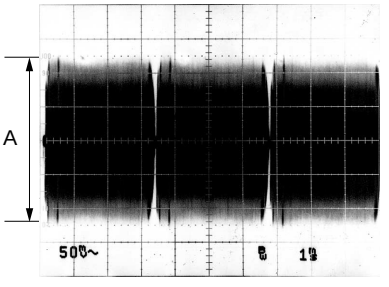
1. Insert a blank tape.
   (Press the keys in this order : HOLD, PESET (NO) and SET (YES) keys, to set the time counter to 00, which facilitates the operation.)
2. Connect an oscilloscope as follows :
   Check : TP301 & TP401/RP-120 board (DSR-1800/P)
   GND : E300 & E401
   TRIG : TP300
3. Select the FE CHECK.

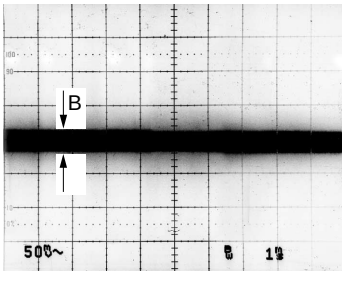


4. Select REC using the ↑ key. Press the PLAY and REC keys.
   After recording for 30 to 60 seconds (time counter reading), press the STOP key.
5. Playback the recorded segment and note down the waveform level.




6. Select FE ONLY using the ↑ key to select VIDEO INS.
   Locate the tape segment that is recorded in step "4", and press the PLAY and REC keys to record (i.e., erase) the recorded segment for about 30 seconds.
7. Playback the segment recorded (erased) in step 6. and confirm that the waveform level is 30% or less.

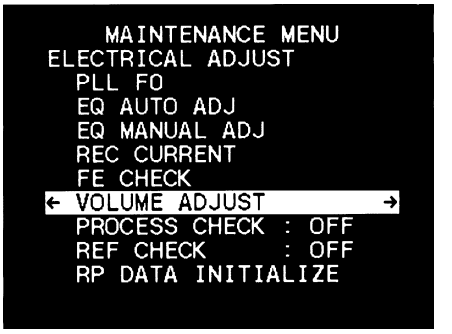



$B \leqq A \times 0.3$

## 6. VOLUME ADJUST

1. Select the VOLUME ADJUST.




2. Disconnect the cable from the VIDEO CONTROL on the rear panel.
3. Press the SET (YES) key to start the adjustment.
4. After completing the adjustment, the display returns automatically to the maintenance menu.

## 7. PROCESS CHECK

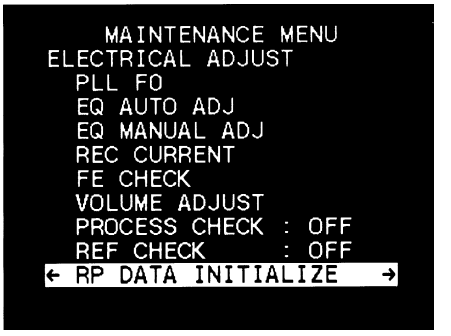
* This menu is for the factory use only.

## 8. REF CHECK

* This menu is for the factory use only.

## 9. RP DATA INITIALIZE

1. Select the RP DATA INITIALIZE.

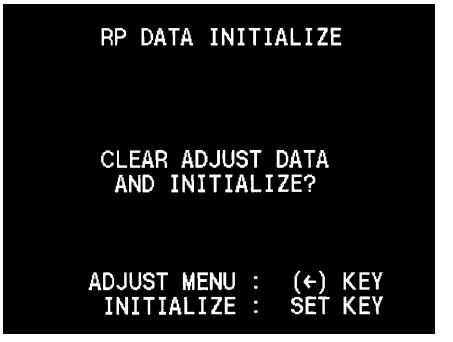


2. As “RP DATA INITIALIZE” will be displayed on the screen, press the SET (YES) key when initializing the adjusted data.

**Note**

After initialization, be sure to perform the following three adjustments in Section “5-3-6. Electrical Adjust.”

1. PLL F0
2. EQ AUTO ADJ
4. REC CURRENT

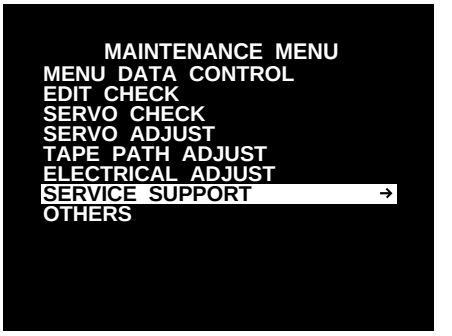


## 5-3-7. Service Support

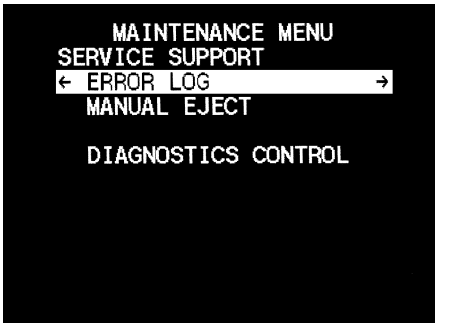
Displays the error codes and error contents which occurred in the past and provides the diagnosis.

### Operating procedure

1. Enter the maintenance menu.
2. Move the cursor to “SERVICE SUPPORT” which is displayed with a white background using the [↑], [↓] keys.



3. Press the [→] key.
   “SERVICE SUPPORT” is selected and its lower layer sub-menu appears.



4. Move the cursor displayed with a white background to a desired item using the [↑], [↓] keys.
5. Press the [→] key to select the desired item.
   (Refer to the respective menu description for the check procedure.)
6. After completing the check, press the [MENU] key to return to the main menu.
7. To check other menus and submenus, repeat steps 4 to 6.
8. Press the [MENU] key to exit the maintenance menu.

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## 1. ERROR LOG

The errors which occurred in the past are displayed.
(The latest eight maximum errors are displayed.)

* The latest error is displayed on the top.

**Note**

The servo system errors only are stored here. The ERROR-91, 92, 93, 94 and 95 are not stored.

## 2. MANUAL EJECT

For the operating procedure of how to take out a tape when the EJECT is inoperable, refer to section 4-3.

## 3. DIAGNOSTICS CONTROL

### ① CLEAR ERROR LOG

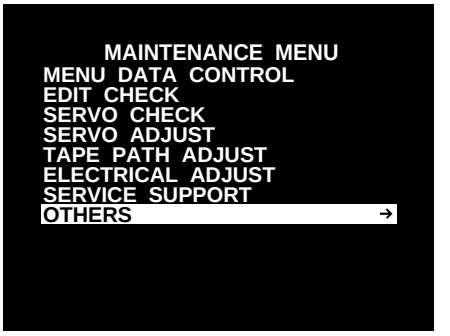
Clears the error history from the ERROR LOG.

## 5-3-8. Others

Enables to check the software version, keyboard and others.

### Operating procedure

1. Enter the maintenance menu.
2. Move the cursor to “OTHERS” which is displayed with a white background using the [↑], [↓] keys.



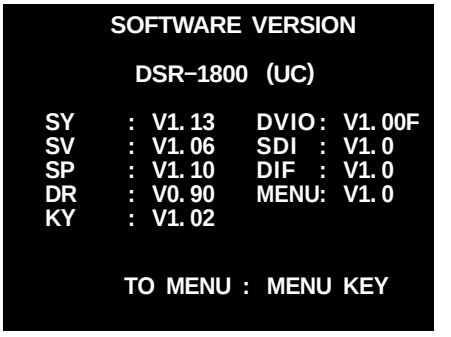
3. Press the [→] key.
   “OTHERS” is selected and its lower layer submenu appears.

4. Move the cursor displayed with a white background to a desired item using the [↑], [↓] keys.
5. Press the [→] key to select the desired item.
   (Refer to the respective menu description for the check procedure after execution.)
6. After completing the check, press the [MENU] key to return to the main menu.
7. To check other menus and submenus, repeat steps 4 to 6.
8. Press the [MENU] key to exit the maintenance menu.

## (1) SOFTWARE VERSION

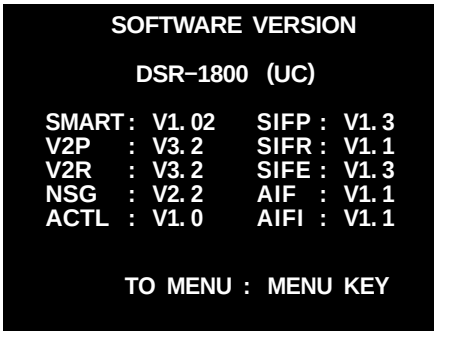
### DSR-1800/P

Displays the model information and software version numbers.




SY : Version of IC519 on the SSP-24 board.
SV : Version of IC211 on the SSP-24 board.
SP : Version of IC519 on the SSP-24 board.
DR : Version of IC1 on the DR-428 board.
KY : Version of IC102 on the KY-484 board.
DVIO : Version of IC602 on the DV-26 board.
(When DSBK-1803 is installed.)
SDI : Version of IC703 on the SDI-62 board.
(When DSBK-1801 is installed.)
DIF : Version of IC402 on the SDI-61 board.
(When DSBK-1802 is installed.)
MENU : Version of the setup menu.

Press the [→] key to display the version below.

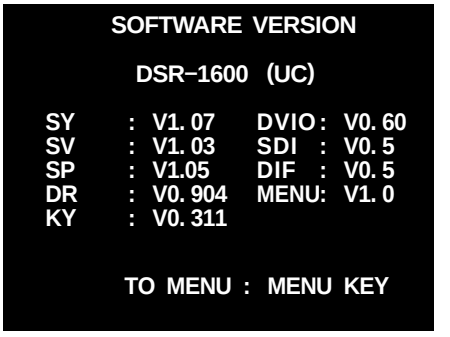



SMART : Version of the IC401 on the SSP-24 board
V2P/V2R : Version of the DPR-175 and FU-78 boards
NSG : Version of IC1213 on the VPR-71 board.
ACTL : Version of IC754 on the DPR-175 board.
SIFP : Version of IC72 on the DPR-175 board.
SIFR : Version of IC552 on the DPR-175 board.
SIFE : Version of IC555 on the DPR-175 board.
AIF : Version of IC106 on the DPR-175 board.
AIFI : Version of IC202 on the DV-26 board.
(When DSBK-1803 is installed.)

* The message NONE appears for the DVIO, SDI, DIF and AIFI when the optional board is not installed in the DSR-1800/P1600/P.
* Contents which are shown in the time counter display can be changed using the [↑], [↓]keys.
* Press the [←] key or the [MENU] key to return to the maintenance menu.

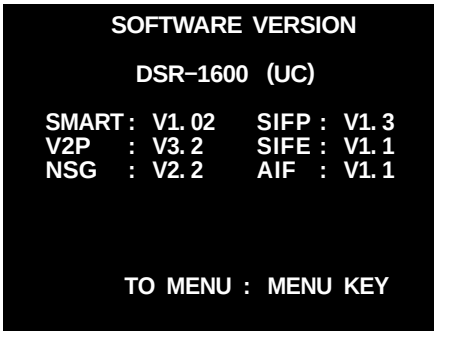
### DSR-1600/P

Displays the model information and software version numbers.




SY : Version of IC519 on the SSP-23 board.
SV : Version of IC211 on the SSP-23 board.
SP : Version of IC519 on the SSP-23 board.
DR : Version of IC1 on the DR-428 board.
KY : Version of IC102 on the KY-484 board.
DVIO : Version of IC602 on the DV-26 board.
(When DSBK-1803 is installed.)
SDI : Version of IC703 on the SDI-62A board.
(When DSBK-1601 is installed.)
DIF : Version of IC402 on the SDI-61A board.
(When DSBK-1602 is installed.)
MENU : Version of the setup menu.

Press the [→] key to display the version below.




SMART : Version of the IC401 on the SSP-23 board
V2P : Version of the SSP-23 and FU-78 boards
NSG : Version of the IC713 on the IF-820 board.
SIFP : Version of IC1072 on the SSP-23 board.
SIFE : Version of IC1555 on the SSP-23 board.
AIF : Version of IC1106 on the SSP-23 board.

* The message NONE appears for the DVIO, SDI and DIF when the optional board is not installed in the DSR-1800/P1600/P.
* Contents which are shown in the time counter display can be changed using the [↑], [↓] keys.
* Press the [←] key or the [MENU] key to return to the maintenance menu.

### (2) MEMORY DISPLAY

* Factory use only.

### (3) DATA DISPLAY

* Factory use only.

# Section 6
# Periodic Inspection and Maintenance

## 6-1. Periodic Inspection List

The following table shows the reference parts replacement time which is not the warranty time of parts.
Refer to the following table to establish the periodic inspection schedule which realizes the full performance and function of a unit and to extend life of a tape. The actual parts replacement period depend on the operating environment and conditions of a unit.

☆ : Part replace ◇ : Check (Adjustment) O : Cleaning

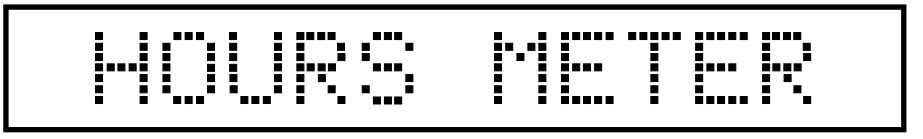
| Inspection items | | | Hours meter | Inspection time (Hours) | | | |
|---|---|---|---|---|---|---|---|
| **Item** | **Part No.** | **Name** | **Menu No.** | **2000** | **4000** | **6000** | **8000** |
| Drum assembly | A-8327-026-A | DEH-19A-R (For DSR-1800/P) | T2 | ☆ | ☆ | ☆ | ☆ |
| | A-8327-027-A | DEH-20A-R (For DSR-1600/P) | T2 | ☆ | ☆ | ☆ | ☆ |
| Tape drive system blocks | | | | | | | |
| Pinch solenoid | A-8279-203- | Pinch Solenoid assembly | T2 | ◇ | ◇ | ◇ | ◇ |
| Brake solenoid | 1-454-930-11 | Solenoid plunger | T2 | ◇ | ◇ | ◇ | ◇ |
| Reel motor (T) | 8-835-636-51 | DC motor (SRD14A/J-RP) | T2 | ◇ | ◇ | ◇ | ◇ |
| Reel motor (S) | 8-835-637-51 | DC motor (SRD15A/J-RP) | T2 | ◇ | ◇ | ◇ | ◇ |
| Loading motor | A-8279-202- | LD Motor assembly | T2 | ◇ | ◇ | ◇ | ◇ |
| Reel sift motor | A-8279-204- | RS motor assembly | T2 | ◇ | ◇ | ◇ | ◇ |
| T reel brake shoe | A-8324-480- | Brake (T) assembly | T2 | ◇ | ◇ | ◇ | ◇ |
| S reel brake shoe | A-8324-481- | Brake (S) assembly | T2 | ◇ | ◇ | ◇ | ◇ |
| Head cleaner solenoid | 1-454-942-11 | Plunger solenoid | T2 | – | – | – | ◇ |
| M stop solenoid | 1-454-932-11 | Plunger solenoid | T2 | – | – | ◇ | ◇ |
| Tape path system blocks | | | | | | | |
| Capstan motor | 8-835-619-51 | DC motor (SCD16A/J-RP) | T2 | ◇ | ◇ | ◇ | ☆ |
| Pinch roller | A-8279-044- | Pinch limiter assembly | T2 | ☆ | ☆ | ☆ | ☆ |
| Guide roller T2 | A-8279-024- | Shuttle (R) assembly | T2 | O | O | O | ◇O |
| Guide roller T3 | A-8279-026- | T drawer arm assembly | T2 | O | O | O | ◇O |
| Guide roller T4 | A-8279-400- | TG-8 arm assembly | T2 | O | O | O | ◇O |
| Guide roller S2 | A-8279-023- | Shuttle (L) assembly | T2 | O | O | O | ◇O |
| Guide roller S3 | A-8323-655- | Tension regulator assembly | T2 | O | O | O | ◇O |
| Guide roller S4 | A-8279-399- | TG-1 arm assembly | T2 | | | | |
| Tape running surface (including tape cleaner) | —— | —— | —— | O | O | O | ◇O |
| Head cleaner | X-3605-665-1 | HC roller assembly | | ☆ | ☆ | ☆ | ☆ |
| Others | | | | | | | |
| Cassette memory terminal | A-8323-659- | MIC holder assembly | T2 | ◇O | ◇O | ◇O | ◇O |

T1: OPERATION HOURS T2 : DRUM ROTATION HOURS T3 : TAPE RUNNING HOURS

## 6-2. HOURS METER

The hours meter data is displayed on the monitor display and the time counter display area.
Therefore, the hours meter data cannot be checked without turning on the main power to the unit.
Periodic inspection is recommended to be performed using the hours meter reading.

**HOURS METER**




### 1. Contents of display

The hours meter has the four types of display mode. The accumulated elapsed hours of operation or accumulated times of operation are displayed in the respective modes. The T2, T3 and CT modes have both of resettable accumulation counter and un-resettable accumulation counter.

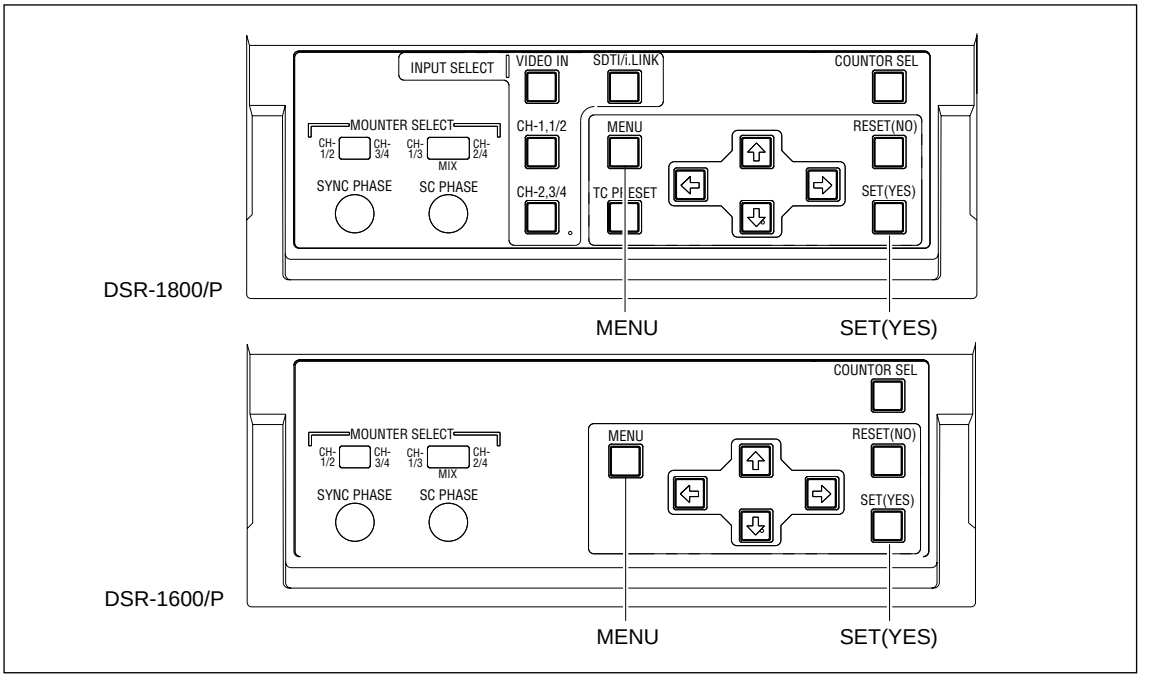
**Note**

The actual hours and times are obtained by multiplying the displayed number by 10.

| Modes | Contents of display |
|---|---|
| T1 : OPERATION | Accumulated hours of power on |
| T2 : DRUM ROTATION | Accumulated hours of drum rotation at the threaded-end position |
| T3 : TAPE RUNNING | Accumulated hours of tape running in the respective modes of fast forward, rewind, playback, search, record and edit (except for the still mode during search) |
| CT : THREADING | Numbers of times of threading and unthreading |

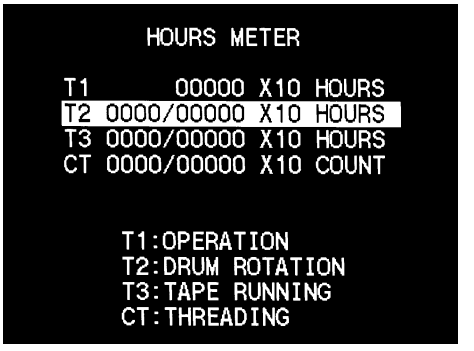
Example : The following display indicates that the accumulated hours of drum rotation at the threaded-end position is 1500 hours.

## 2. Displaying Information




1. Press the MENU key.
2. Select HOURS METER and press the → key.
3. All of the hours meter information of T1, T2, T3 and CT appear on the monitor screen.
4. Either one of T1, T2, T3 or CT is displayed on the time counter display area. Select another item using the ↑, ↓ keys.
5. When the mode of T2, T3 or CT is selected, the resettable hours meter value appears first.
6. The un-resettable hours meter value is displayed while the → key is kept pressed.

**[Monitor screen]**

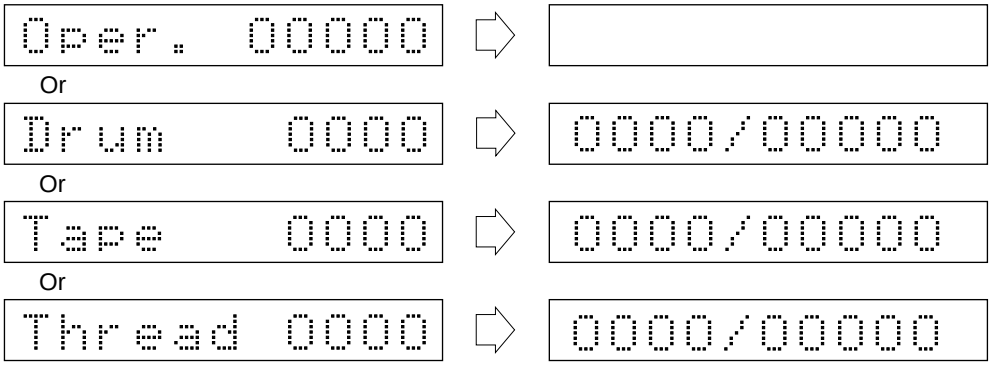



**Note**

When the hours meter value becomes larger and exceeds the limit of display, " — —" will appear.

7. Press the MENU key again to return to the original mode.

**[Counter display area]**



### 3. How to Reset

1. DSR-1800/P ; S400-1 on the SSP-24 board to ON.
   DSR-1600/P ; S400-1 on the SSP-23 board to ON.
2. Press the MENU key.
3. Select HOURS METER using ↑, ↓ keys.
4. Select the desired item to reset using ↑, ↓ keys.
5. When the RESET key is pressed, the display changes to “0000” which blinks.
6. When the SET (YES) key is pressed, a message appears requesting approval to reset, on the monitor.
7. To reset the memory, press the SET (YES) key again to exit the hours meter display mode.

**Note**

The following message appears while saving data into memory during reset.
If the main power is turned off while the message appears, the memory will not be reset correctly. Do not turn off the main power while the display appears.

8. Set the switch S400-1 on the SSP-24 board (DSR-1800/P)/SSP-23 board (DSR-1600/P) to OFF.

## 6-3. Maintenance upon Completion of Repair

Perform the following maintenance work regardless of the operating hours of the unit, after repairing it.

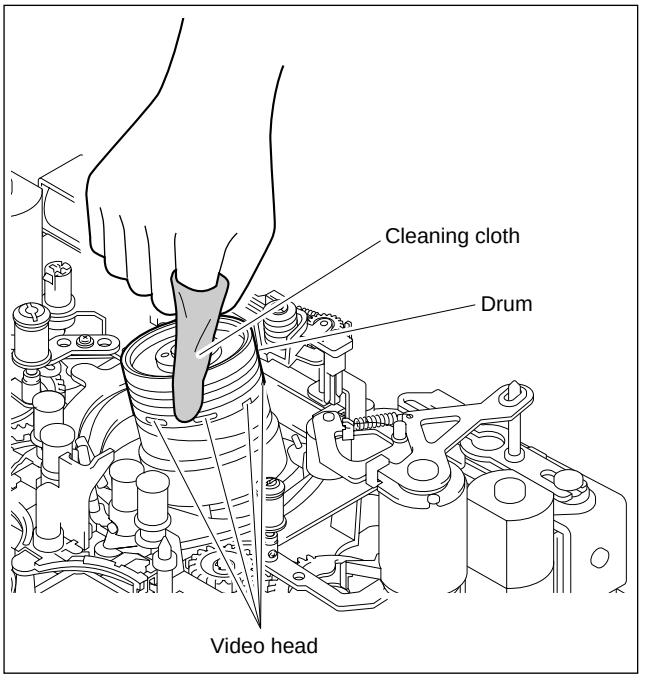
1. Video head cleaning
   (Refer to section 6-3-1 for cleaning procedure.)
2. Tape running path cleaning
   (Refer to section 6-3-2 for cleaning procedure.)

**Note**

After a unit is cleaned, insert a cassette after cleaning fluid is dried completely.

### 6-3-1. Video Head Cleaning Procedure

Bring a cleaning cloth moistened with cleaning fluid in contact with the head tip gently, and rotate the drum slowly with hand for cleaning.




**Notes**

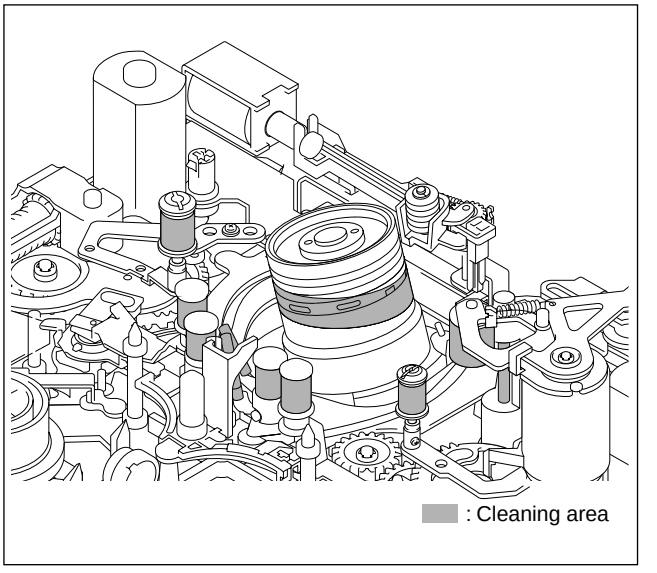
- Never move the cleaning cloth in vertical direction with respect to the drum rotation (up and down with respect to the drum) during cleaning.
- After cleaning, wipe off moisture using a dry cleaning cloth.
- Turn off the main power before cleaning a unit.

### 6-3-2. Tape Running Path Cleaning

Clean the tape guide, drum, capstan, pinch roller, tape cleaner and other parts which contact with video tape, with cleaning cloth moistened with cleaning fluid.

**Note**

After cleaning, wipe off moisture using a dry cleaning cloth.

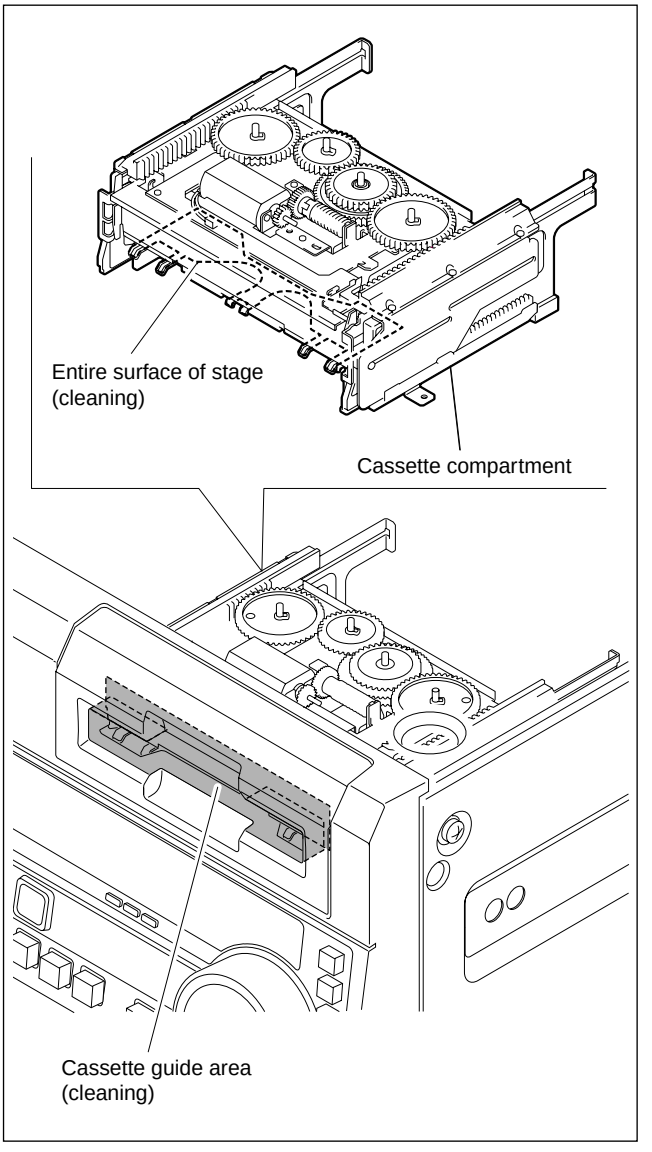


### 6-3-3. Cassette Compartment Entrance Cleaning

Clean the area around the cassette guide of the front panel and entire surface of the stage of the cassette compartment as shown using cleaning cloth moistened with cleaning fluid.

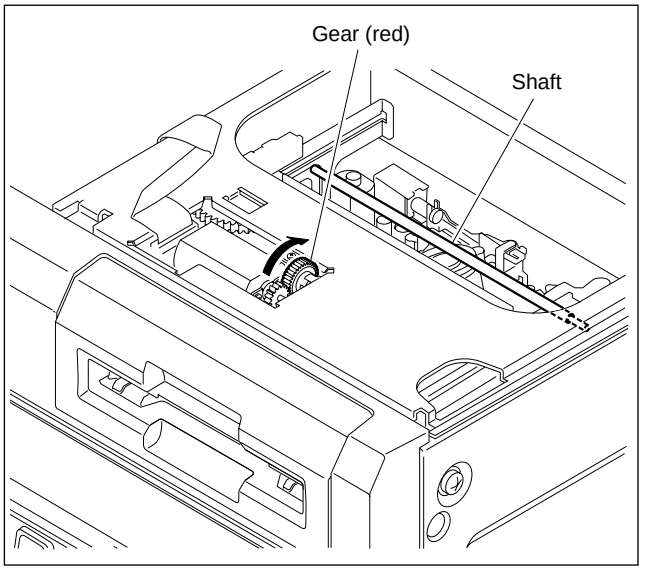
**Note**

Remove the cassette compartment when cleaning a unit to prevent foreign materials from dropping into a unit.



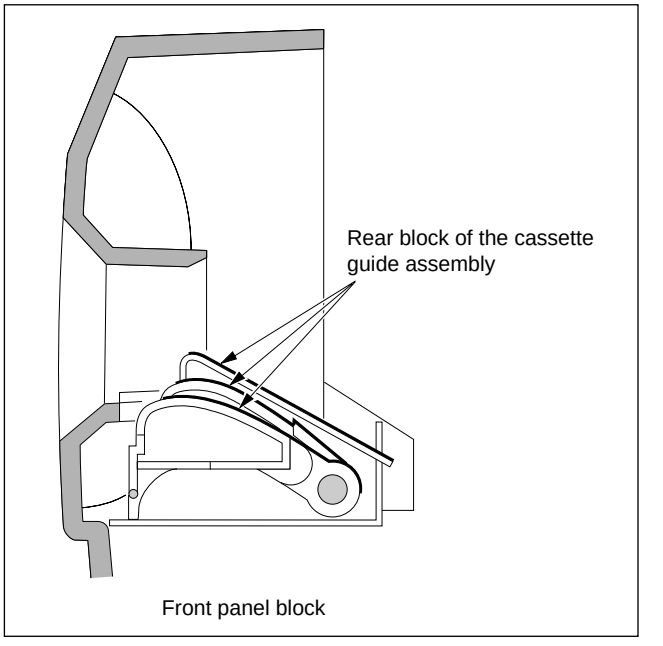

### 6-3-4. Cassette Compartment Shaft Cleaning

Turn the gear (red) in the arrow direction until you can see the shaft. Clean the shaft with a cleaning cloth moistened with a cleaning fluid.




### 6-3-5. Cassette Guide Assembly Cleaning

Clean the rear block of the cassette guide assembly with a cleaning cloth moistened with a cleaning fluid.



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# Section 7
# Replacement of Mechanical Parts

## 7-1. General Information on Parts Replacement and Adjustment

### 7-1-1. Preparation Before Starting Parts Replacement

- Remove the ornamental parts as needed.
- When replacing parts or performing mechanical adjustment, remove the cassette compartment from the DSR-1800/P/1600/P not so far as specified. (Refer to section 3-4.)
- When the connector of the cassette compartment is removed, the protection circuit starts functioning. Refer to section “4-3-3. Operating the VTR without a Cassette Tape.” to operate the DSR-1800/P/1600/P without the cassette compartment.

### 7-1-2. Drum Assembly

- The drum assembly is a periodic replacement part. The drum should be replaced in accordance with the periodic replacement list.
- The drum assembly must be replaced in the following cases :

(1) When the video heads are worn out so that the proper tape-to-head contact is lost and recording and playback cannot be performed correctly;
(2) When the rabbet guide of the lower drum is worn out so that the correct RF envelope cannot be obtained even after adjusting the tape path to optimize the tracking.
(3) When the rabbet guide or tape running surface of the lower drum is damaged;
(4) If the drum rotation is abnormal and the VTR does not work properly due to noise or jitter.

### 7-1-3. Grease

Be sure to use only the authorized grease.
If grease other than the authorized one is used, major malfunctions may result due to differences in grease viscosity and its ingredients.
If grease containing dirt is used, the shafts and bearings may be damaged and major malfunctions may result.

Use the following grease for the DSR-1800/P/1600/P :

Grease (SG941 (20 g)) : 7-662-001-39

- Do not apply grease to any parts other than the specified parts.
- Apply just enough grease to cover a coating on the surface.
  Wipe off any grease that oozes out into the surrounding parts with gauze or a soft cloth.

## 7-1-4. Tightening Torque and Handling of Washers

### 1. Screwdrivers and Tightening Torque of Screws

Many M1.4 and M2 screws are used in the DSR-1800/P/1600/P.
Be sure to use the authorized tools to loosen and tighten them.
In addition, use a torque screwdriver to tighten the screws with the specified tightening torque.

| | |
|---|---|
| Torque screwdriver bit (for M 1.4) : | J-6325-110-A |
| Torque screwdriver bit (for M 2) : | J-6325-380-A |
| Hexagon bit (for torque screwdriver) : | J-6326-120-A |
| Torque screwdriver (for 3 kgf•cm) : | J-6325-400-A |

Tightening torque

| | |
|---|---|
| For M1.4 screw : | 0.1 N•m (1.0 kgf•cm) |
| For M2 screw : | 0.2 N•m (2.0 kgf•cm) |

**Reference**

DSR-1800/P/1600/P uses many small screws that easily fall inside the machine when removing and re-assembling parts. To avoid this risk, magnetize the screwdriver bit slightly enough to prevent small screws from falling into the machine. However, when installing the drum assembly, never use a magnetized screwdriver.

### 2. Stop Washer and E ring

Do not use old stop washers and E rings that have been removed.
Always use new stop washers and E ring to attach the parts.

| | |
|---|---|
| Stop washer (1.5) : | 3-669-465-01 |
| Stop washer (2.3) : | 3-669-596-01 |
| E ring (2.3) : | 7-624-105-04 |
| Cotter polyethylene washer : | 3-321-813-01 |
| Polyslider washer (Ø2.0) : | 3-701-437-01 |

#### How to Remove the Stop Washers and E ring

(a) Use the following fixtures to remove stop washers and E ring.
Washer extracting fixture (A) : J-6082-234-A

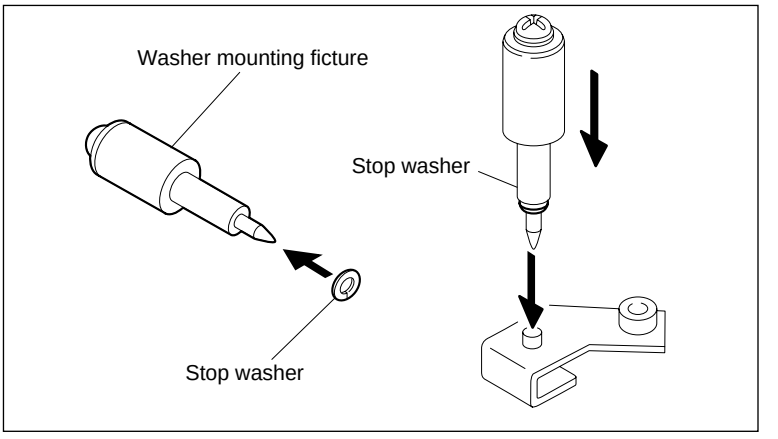
**Note**

- Be careful not to drop the stop washers and E ring inside the DSR-1800/P/1600/P.
- Be careful not to let tools touch other parts, especially the drum.

#### How to Attach the Stop Washers

Use the following tools to attach stop washers :
Washer mounting fixture Ø1.5 : J-6082-231-A
Washer mounting fixture Ø1.2 : J-6082-232-A
Washer mounting fixture Ø0.8 : J-6082-233-A

(a) Insert a stop washer to the tip of the washer mounting fixture.
(b) Set the thin tip of the mounting fixture perpendicularly to the top of the shaft to which the stop washer is to be installed.
(c) Press the thick portion of the fixture downward to install the stop washer onto the shaft.



## 7-2. Drum Replacement

### Outline

#### Replacement

Removing the frame assembly, MD
Fixing MD assembly (Serving position)
Disconnecting the connectors
Removing the head cleaner assembly
Replacing the drum assembly
Reattaching the head cleaner assembly
Reconnecting the connectors
Reattaching the frame assembly, MD
Cleaning the heads and tape running surface

#### Adjustment after replacement

Tape path adjustment
RF switching position adjustment
EQ adjustment

### Note

Take care not to damage the tape guides around the drum assembly, tape running surface on the drum, video heads of the drum assembly and so on when replacing the drum assembly.

### Basic knowledge

Besides the periodic replacement, replace the drum assembly in the following cases.

- When no proper RF waveform can be obtained even if tracking adjustment is performed.
- When the damaged tape running surface on the drum cannot be recovered.

### Preparations

1. Set the unit into the unthreading end status.
2. Power off the unit.
3. Remove the top plate. (Refer to Section 3-3.)
4. Remove the cassette compartment assembly. (Refer to Section 3-4.)

### Tool

- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Torque screwdriver bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A

## Replacement

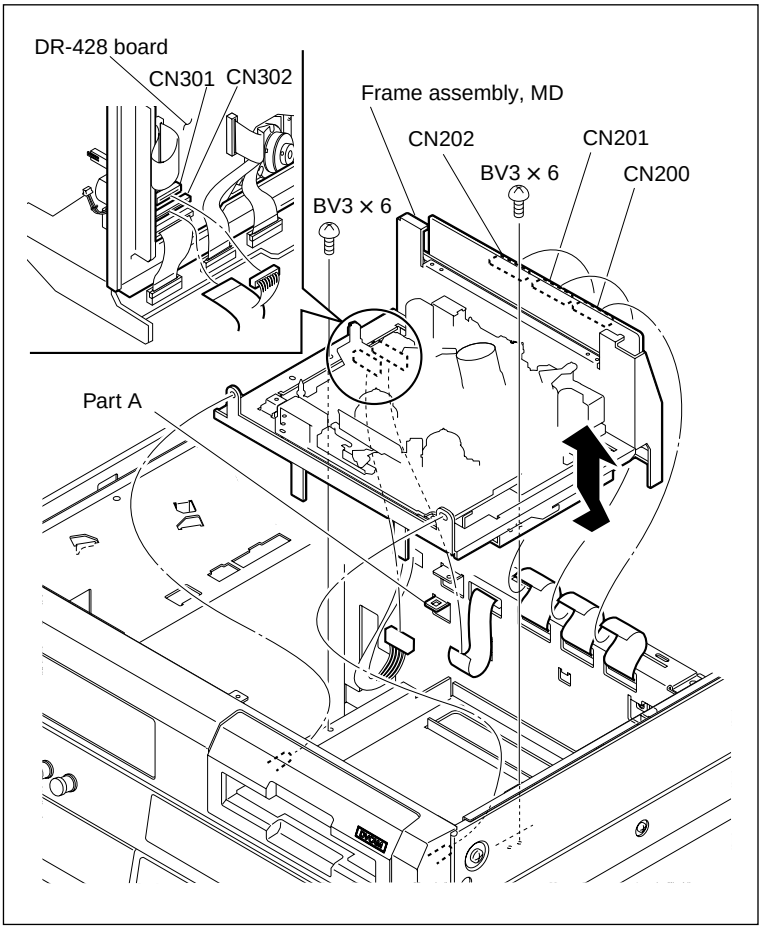
### 1. Removing the frame assembly, MD

(1) Remove the two screws, and remove the frame assembly, MD in the arrow direction.

**Note**

Make sure the frame assembly, MD does not touch part A.

(2) Disconnect the connectors (CN301, CN302) of the DR-428 board, and connectors (CN200, CN201, CN202 (RP-120 board only) of the PR-120 board (DSR-1800)/PRE-45 board (DSR-1600), and remove the frame assembly, MD.

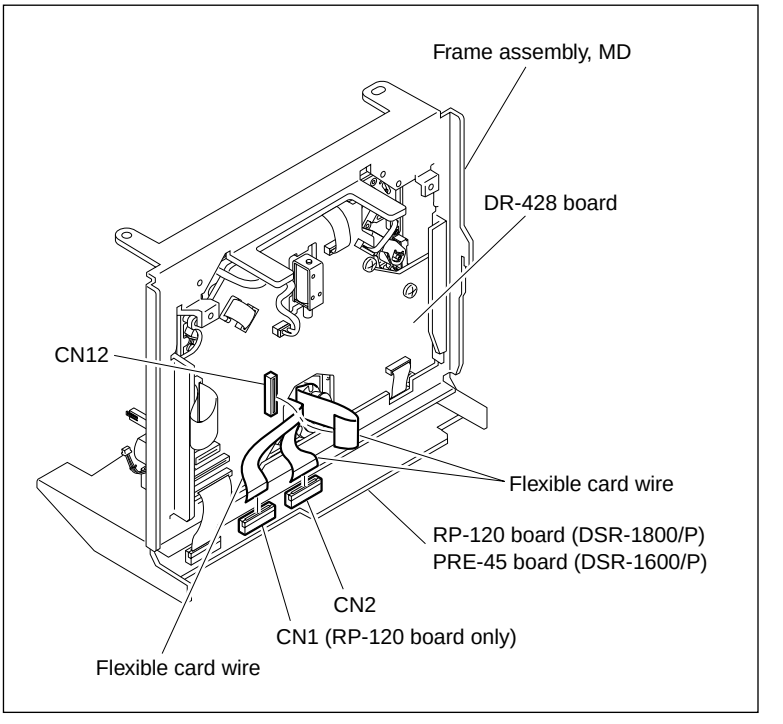



### 2. Disconnecting the connectors

Disconnect the flexible card wires from the connector (CN12) on the DR-428 board and four connectors (CN1 (RP-120 board only), CN2) on the RP-120 board (DSR-1800/P)/PRE-45 board (DSR-1600/P) located on the rear side of the chassis.

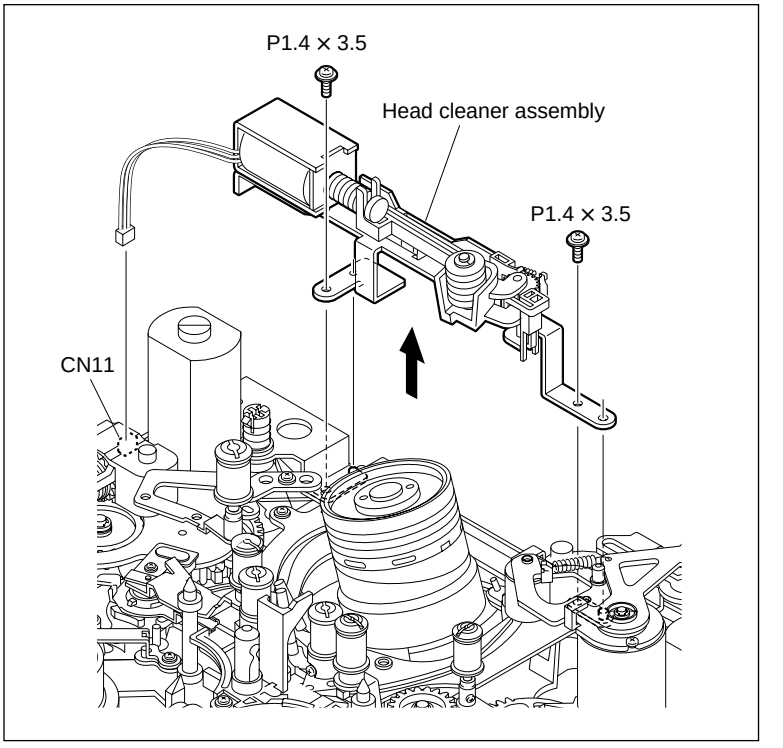
**Note**

Be careful not to suffer injury at hand by chassis during the disconnection.



### 3. Removing the head cleaner assembly

(1) Disconnect the harness connector from the connector (CN11) on the DR-428 board with tweezers.
(2) Remove the two screws, and remove the head cleaner assembly in the direction of the arrow.



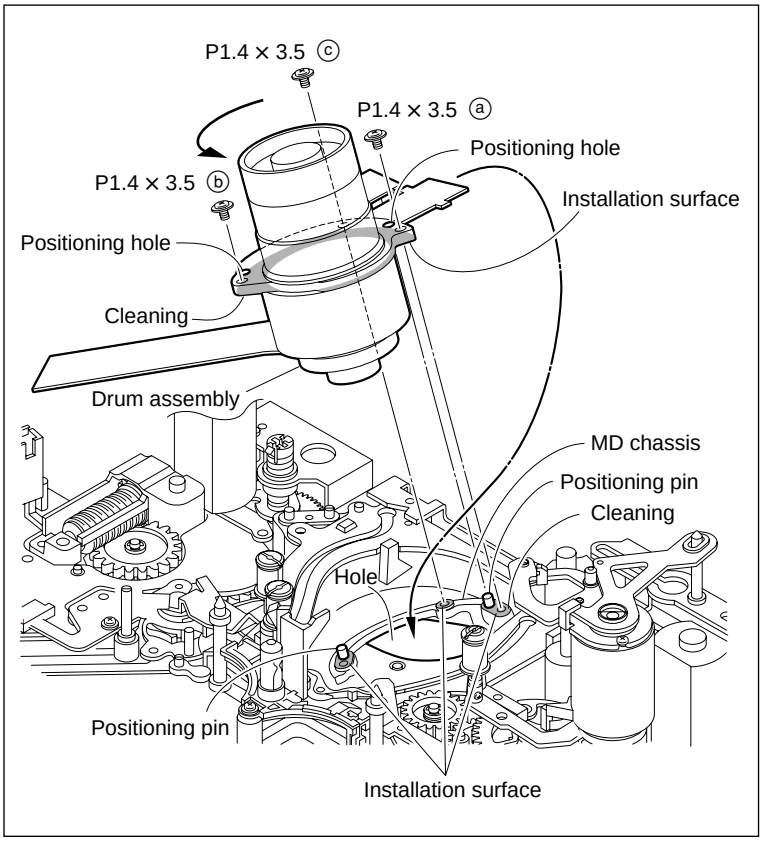

### 4. Replacing the drum assembly

(1) Remove the three screws, and remove the drum assembly from the MD chassis.

**Note**

Take care not to contact the drum assembly to the peripheral tape guides.

(2) Clean the installation surfaces of a new drum assembly and MD chassis with a cleaning cloth moistened with cleaning fluid.
(3) Put the five flexible card wires into the hole on the MD chassis, and align the two positioning pins on the MD chassis with the holes of the drum assembly.
(4) While moving the drum assembly in the direction of the arrow (counterclockwise direction), tighten the three screws in the order of ⓐ, ⓑ, ⓒ.
Tightening torque : 0.1 N•m {1 kgf•cm}



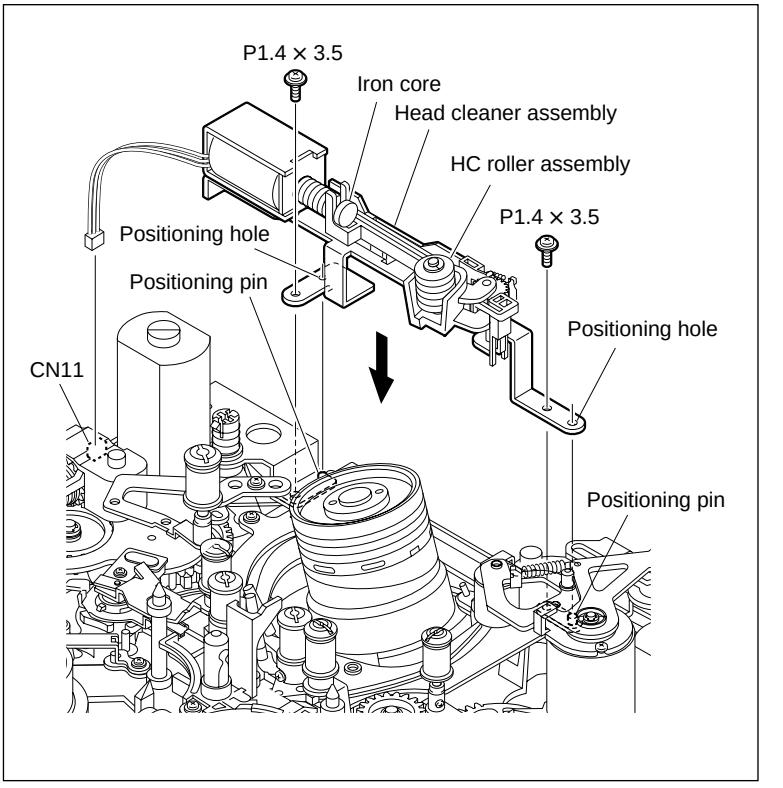
### 5. Reattaching the head cleaner assembly

(1) Align the positioning hole of the head cleaner assembly with the positioning pin on the MD chassis, and reattach it with the two screws.
Tightening Torque : 0.1 N•m {1 kgf•cm}

(2) Reconnect the harness to the connector (CN11) on the DR-428 board.

**Note**

- Use care not to contact the head cleaner assembly with the tape running surface on the drum.
- Do avoid touching the HC roller assembly with bave hands.

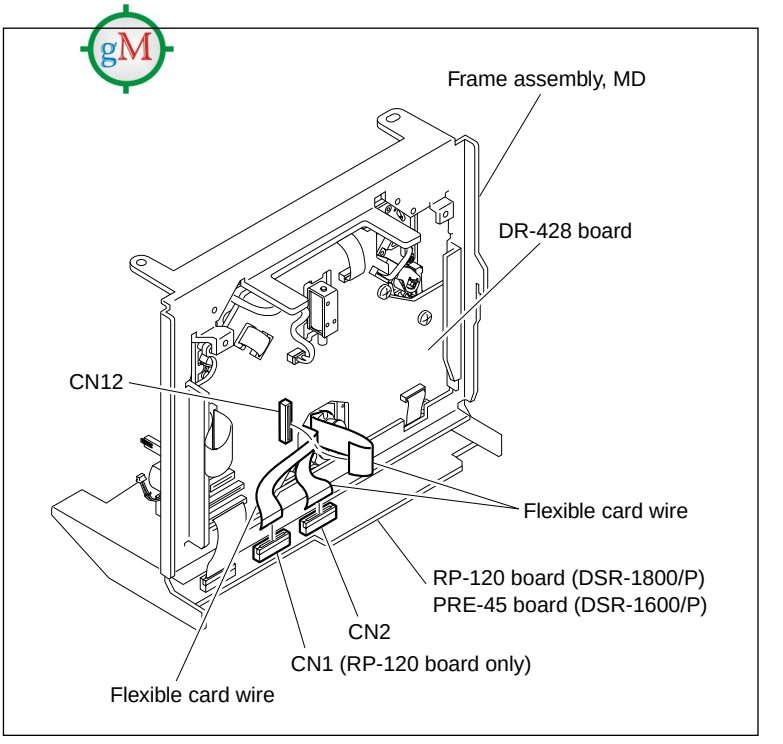



### 6. Reconnecting the connectors

Reconnect the flexible card wires to the connector (CN12) on the DR-428 board, and flexible card wires to the connectors (CN1 (RP-120 board only, CN2) on the RP-120 board (DSR-1800/P)/ PRE-45 board (DSR-1600/P).

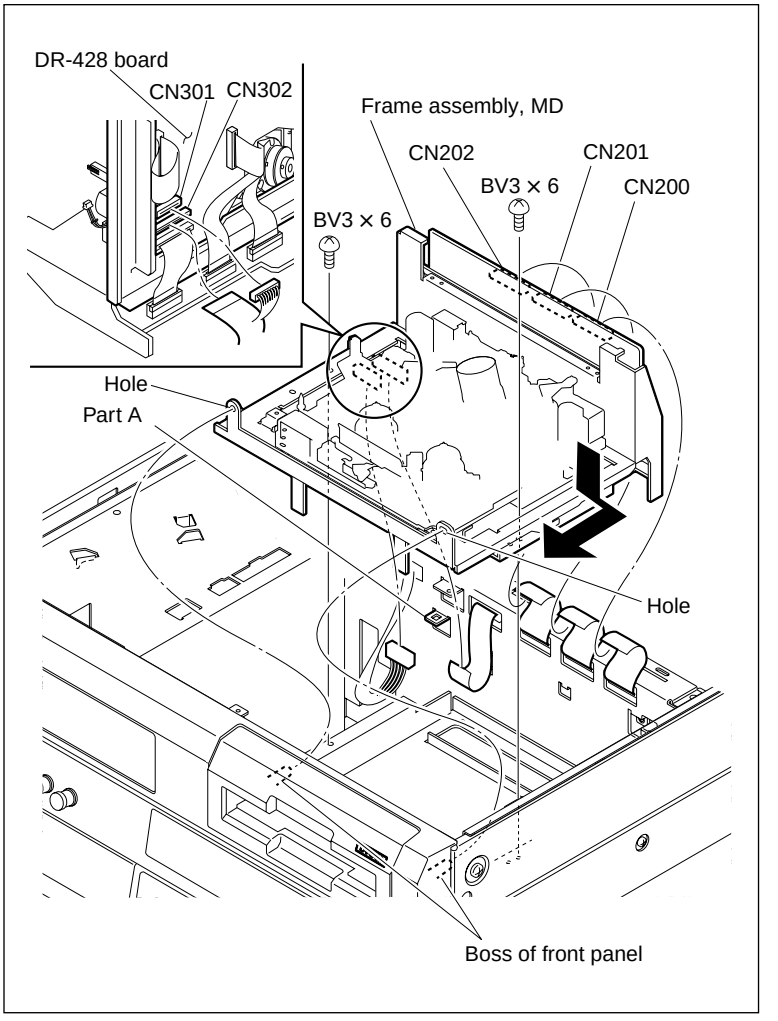
**Notes**

- Be careful not to insert the flexible card wire obliquely.
- Do insert the flexible card wire straight and securely as far as it will go.
- Take care not to fold the flexible card wire. This shortens the life of the flexible card wire.



### 7. Reattaching the frame assembly, MD

(1) Connect the connectors (CN301, CN302) of the DR-428 board, and connectors (CN200, CN201, CN202 (RP-120 board only) of the PR-120 board (DSR-1800)/PRE-45 board (DSR-1600).
(2) Insert the bosses of the front panel into the holes of the frame assembly, MD, and align the positioning pin and positioning hole. Be careful not to touch part A when attaching the frame assembly, MD in the arrow direction.
(3) Attach the frame assembly, MD using the two screws.




### 8. Cleaning the heads and tape running surface

Clean the tape running surfaces of the drum and video heads with cleaning cloth moistened with cleaning fluid.

---

**Adjustment after replacement**

### 9. Tape path adjustment

(Refer to Section 8-2.)

### 10. RF switching position adjustment

(Refer to Section 8-3.)

### 11. EQ adjustment

(Refer to Section 5-3-5.)

# 7-3. S/T Brake Assembly Replacement

## Outline

### Replacement

Removing the frame assembly, MD
Moving the S/T reel tables
Removing the L push plate (only when replacing the T-side brake assembly)
Removing the MIC assembly (only when replacing the T-side brake assembly)
Removing the reel cover
Replacing the brake assembly
Checking and adjusting the brake torque
Reattaching the reel cover
Reattaching the MIC assembly (only when replacing the T-side brake assembly)
Reattaching the L push plate (only when replacing the T-side brake assembly)
Reattaching the frame assembly, MD

## Note

- Prepare a new cotter polyethylene washer when replacing the brake assembly.
  Cotter polyethylene washer (1.5) : 3-321-813-01
- Be careful not to lose the polyslider washer between the base plate and the MIC assembly.
- When replacing the T-side brake assembly, prepare a new stop washer for mounting the MIC assembly.
  Stop washer (1.5) : 3-669-465-01 × 1 (for mounting the MIC assembly)

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Brake torque gauge (CCW) : J-6443-710-A
- Brake torque gauge (CW) : J-6443-720-A
- Torque screwdriver’s bit (for M1.4) : J-6325-110-A
- Torque screwdriver’s bit (for M2) : J-6325-380-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Tweezers

## Replacement

### 1. Removing the frame assembly, MD

Remove the frame assembly, MD.
(Refer to Section 7-2 Step 1.)

### 2. Moving the S/T reel tables

Turn the reel shift motor gear by the bamboo skewer to bring the S/T reel tables to the standard cassette position.
(Refer to Section 7-19.)

### 3. Removing the L push plate (only when replacing the T-side brake assembly)

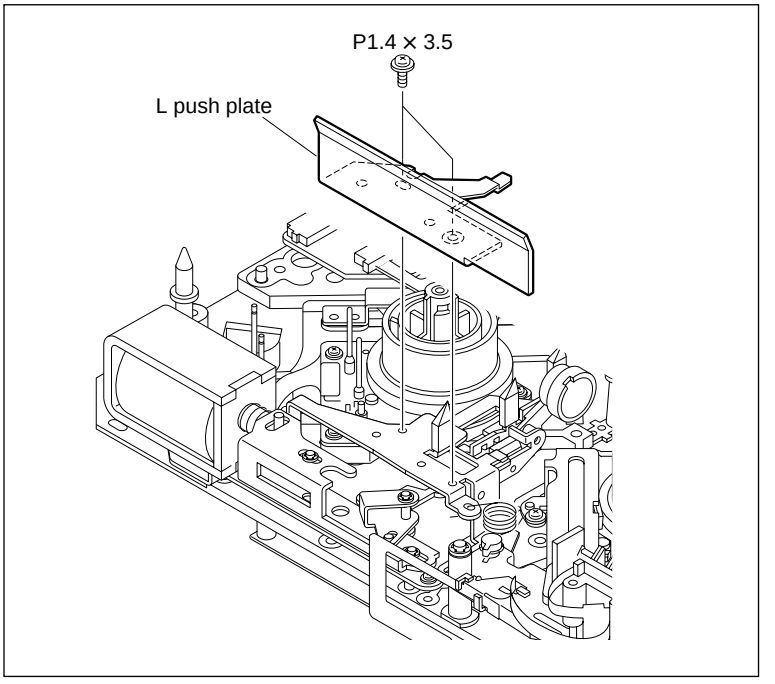
Remove the two screws to remove the L push plate.

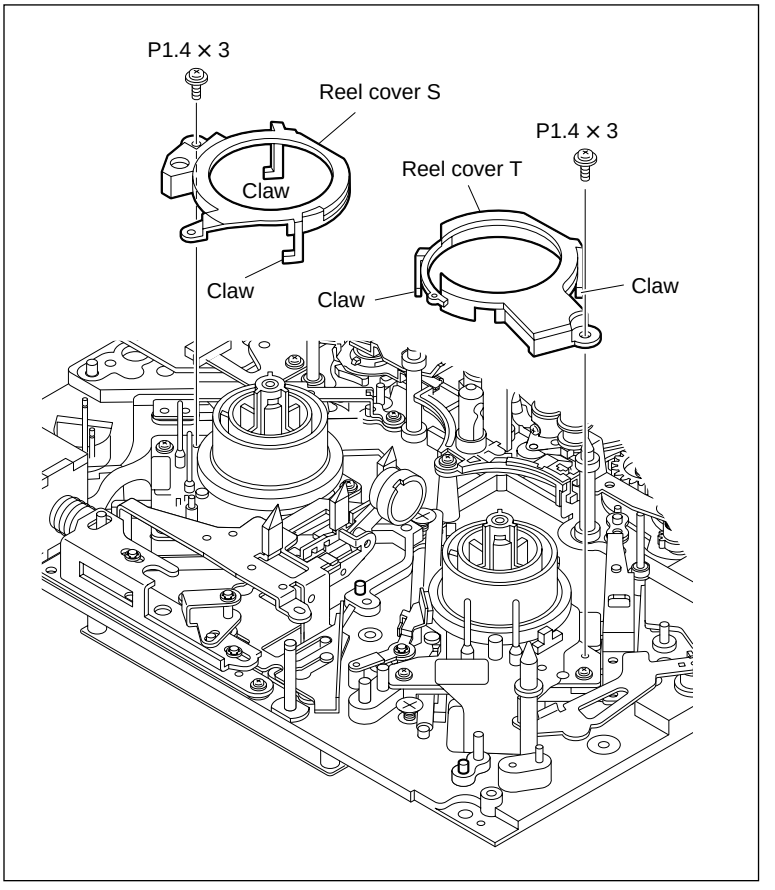
### 4. Removing the MIC assembly (only when replacing the T-side brake assembly)

Remove the MIC assembly.
(Refer to Section 7-19.)

### 5. Removing the reel cover

Remove the screw, and then release the two claws to remove the reel cover S or T.



## 6. Replacing the brake assembly

(1) Remove the cotter polyethylene washer and remove the brake assembly and the brake springs S/T.

**Note**

Use care to prevent the brake spring from flying off when removing.
The polyslider washer located under the brake spring may come off together with the brake spring, therefore be careful not to lose it.
If it comes off, return it in place.

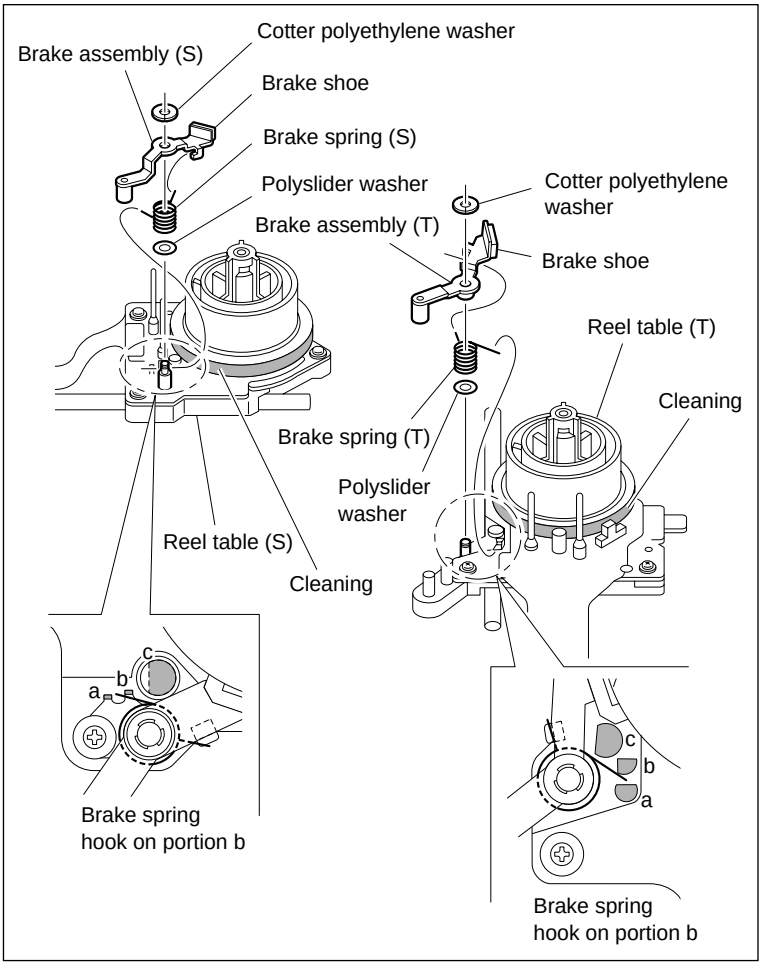
(2) Wipe the contact surface on the reel table against the brake assembly with a cleaning cloth moistened with cleaning fluid.

(3) Join the brake spring to a new brake assembly as shown in the figure and fit it on the reel motor shaft.

**Note**

Avoid touching the brake shoe when replacing.

(4) Attach a new cotter polyethylene washer

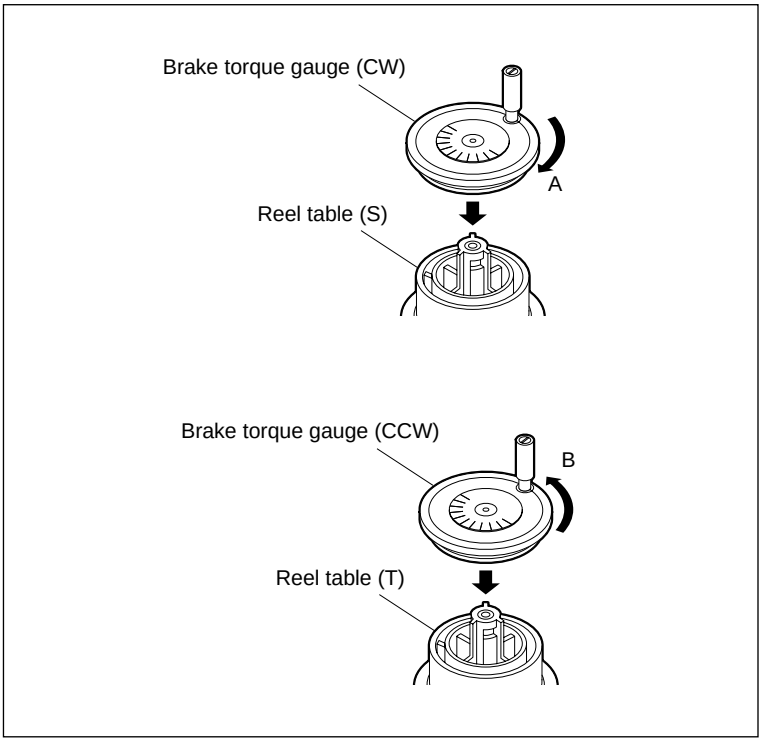



## 7. Checking and adjusting the brake torque

(1) S reel brake torque
Check the S reel brake torque meets the specification below by turning the knob of the brake torque gauge (CW) in the A direction a turn in 1 to 3 seconds.
Tightening Torque : 7.5 ±0.5 m N•m
{75 ±5 gf•cm}

(2) T reel brake torque
Check the T reel brake torque meets the specification below by turning the knob of the brake torque gauge (CCW) in the B direction a turn in 1 to 3 seconds.
Tightening Torque : 7.5 ±0.5 m N•m
{75 ±5 gf•cm}

(3) Failing satisfaction of the specification, readjust by changing the positon that the brake spring hooks on.
- If the torque is high, hook the brake spring on the c portion.
- If the torque is low, hook the brake spring on the a portion.



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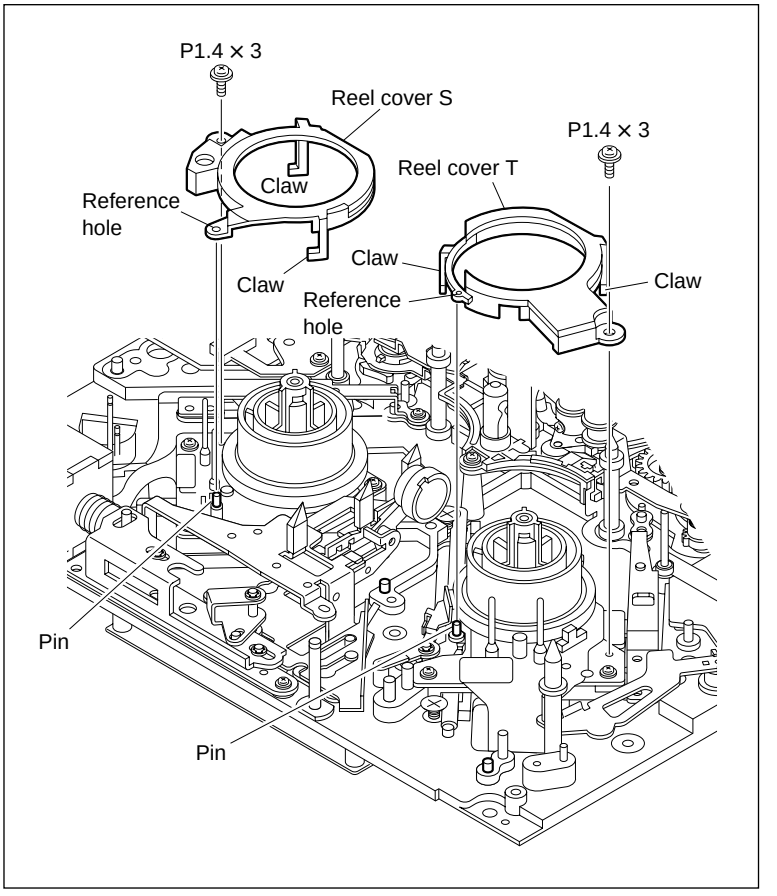
### 8. Reattaching the reel cover

(1) Align the reference hole in the reel cover with the pin in the reel motor, and hook the two claws.

(2) Fix the reel cover S or T with the screw. After fixing, apply screw locking compound. Tightening Torque : 0.1 N•m {1 kgf•cm}

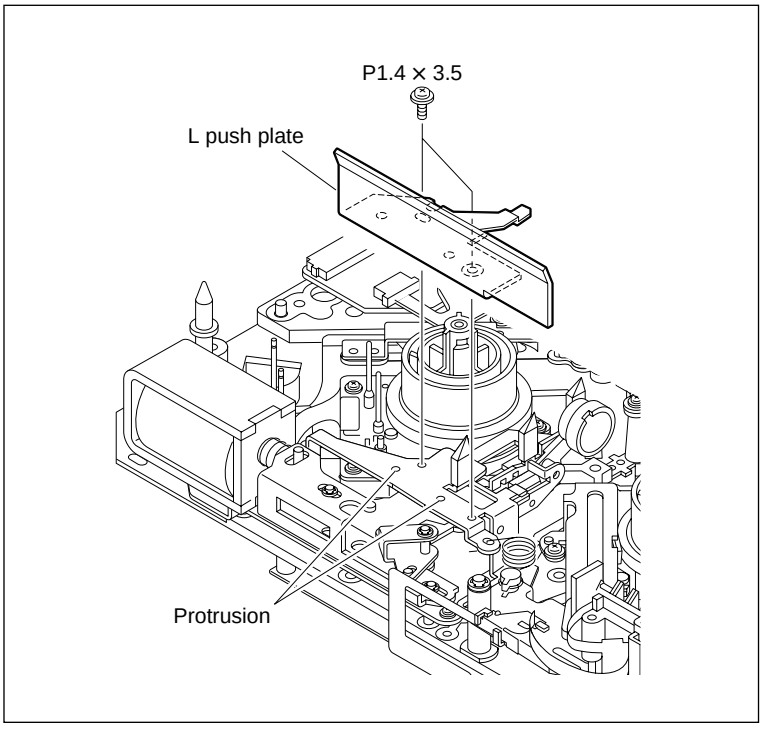



### 9. Reattaching the MIC assembly (only when replacing the T-side brake assembly)

Reattach the MIC assembly.
(Refer to Section 7-19.)

### 10. Reattaching the L push plate (only when replacing the T-side brake assembly)

Reattach the L-push plate with the two screws with the two holes in the L push plate aligned with the two protrusions on the RLR assembly.
Tightening Torque : 0.1 N•m {1 kgf•cm}




### 11. Reattaching the frame assembly, MD

Reattach the frame assembly, MD.
(Refer to Section 7-2 Step 7.)

# 7-4. Brake Solenoid Replacement

## Outline

### Replacement

Removing the frame assembly, MD
Disconnecting the connector
Removing the brake assembly
Replacing the brake solenoid
Reattaching the brake assembly
Reconnecting the connector
Reattaching the frame assembly, MD
Checking the performance

## Note

Prepare a new stop washer when replacing the brake solenoid.
Stop washer (1.5) : 3-669-465-01 × 1

## Preparation

1. Set the unit to the unthreading end status after the unit to the L cassette position.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver's bit (for M2) : J-6325-380-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Tweezers

## Replacement

### 1. Removing the frame assembly, MD

Remove the frame assembly, MD.
(Refer to Section 7-2 Step 1.)

### 2. Disconnecting the connector

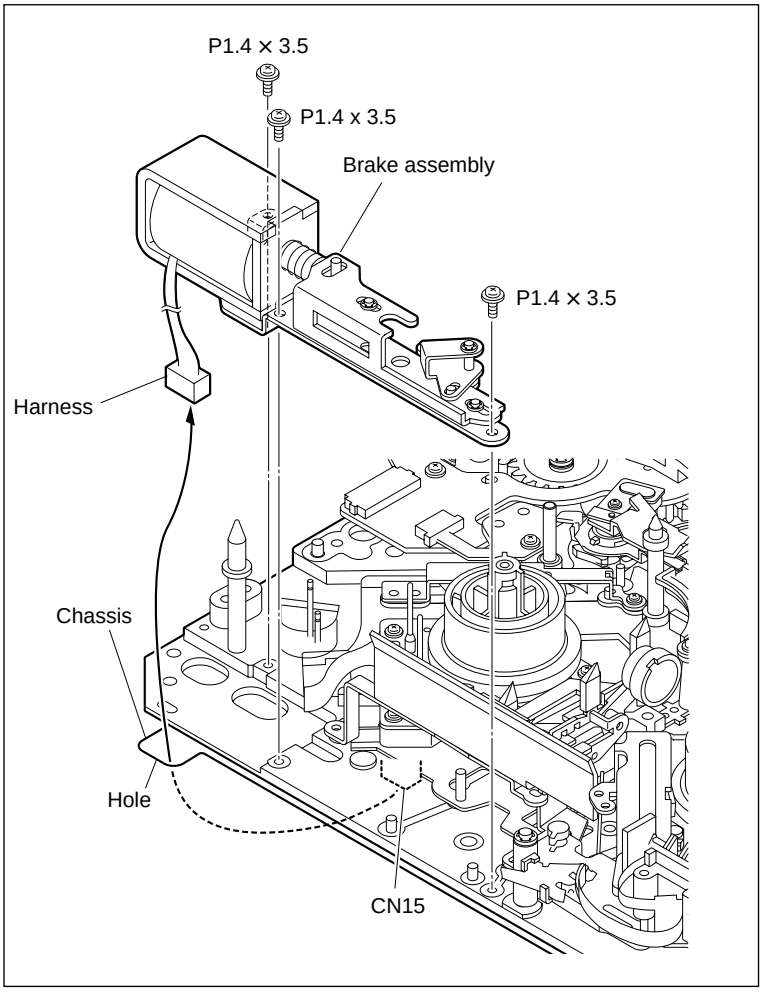
Disconnect the harness from the connector (CN15) on the DR-428 board located on the back side of the MD chassis with tweezers.

**Note**

Be careful not to suffer injury at hand by chassis during the disconnection.

### 3. Removing the brake assembly

(1) Remove the three screws securing the brake assembly.
(2) Remove the brake assembly with the iron core of brake plunger moved a little in the pulled in direction.
(3) Pull out the harness of the solenoid from the square hole in the left side of the chassis with the brake assembly lifted up.

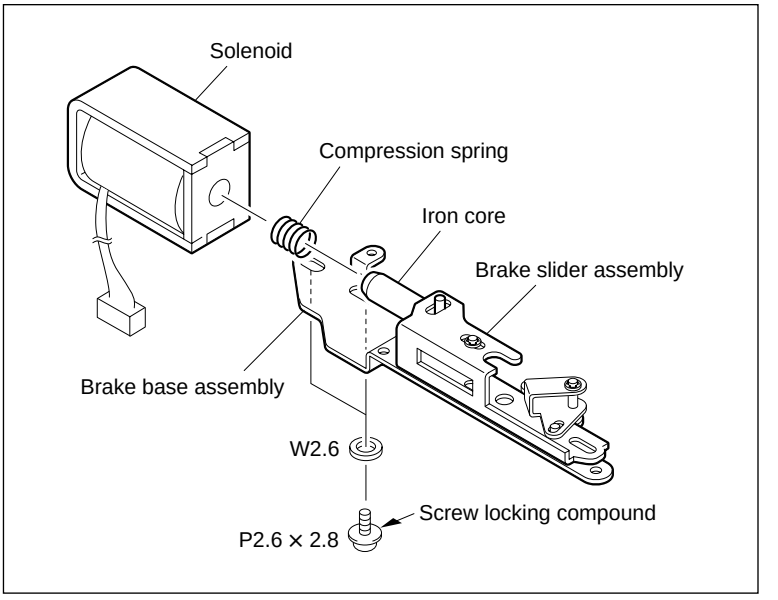


### 4. Replacing the brake solenoid

(1) Remove the two screws and remove the solenoid from the brake base assembly.

**Note**

During this operation, the two washers come off together with the two screws, and further the compressed coil spring comes off from the iron core of the solenoid. Be careful not to lose them.

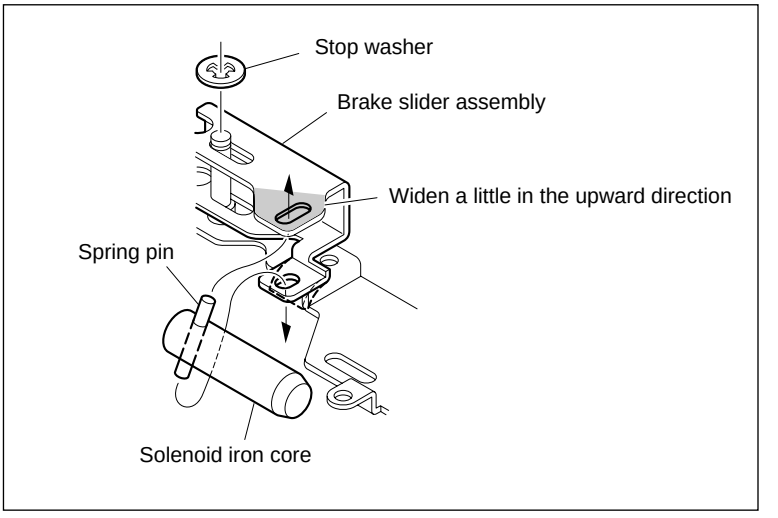



(2) Remove the stop washer shown in the brake slider assembly figure.

(3) Widen slightly the clearance shown in the brake slider assembly figure by a finger to remove the iron core of the solenoid.

**Note**

Applying an excessive force may cause deformation of the brake slider assembly.




(4) Reattach an iron core pin of a new solenoid to the brake slider assembly following the same step (3).

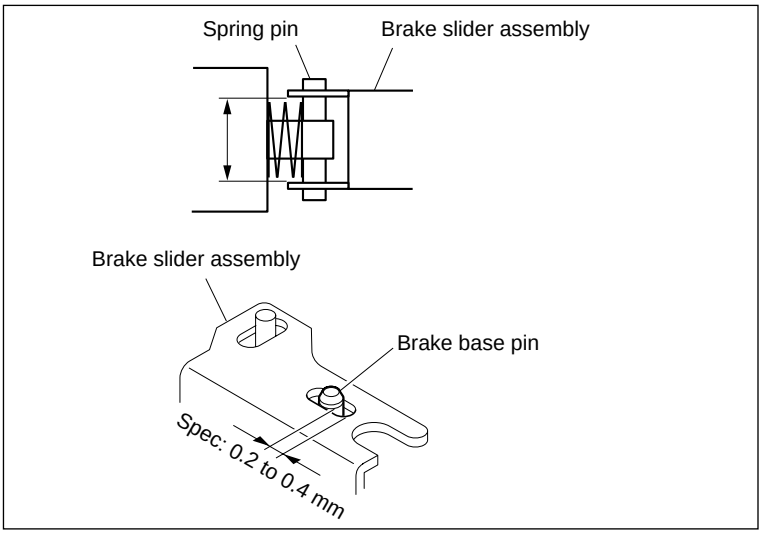
(5) After fitting the compressed coil spring removed in step (1) on the iron core, insert the iron core in a new solenoid.

(6) Fix temporally the solenoid positioning as shown in the figure to the brake base assembly with the two screws and two washers.

(7) Ensure that the compressed coil spring is placed between the upper and lower plates of the brake slider assembly (within the double headed arrow) as shown in the figure.

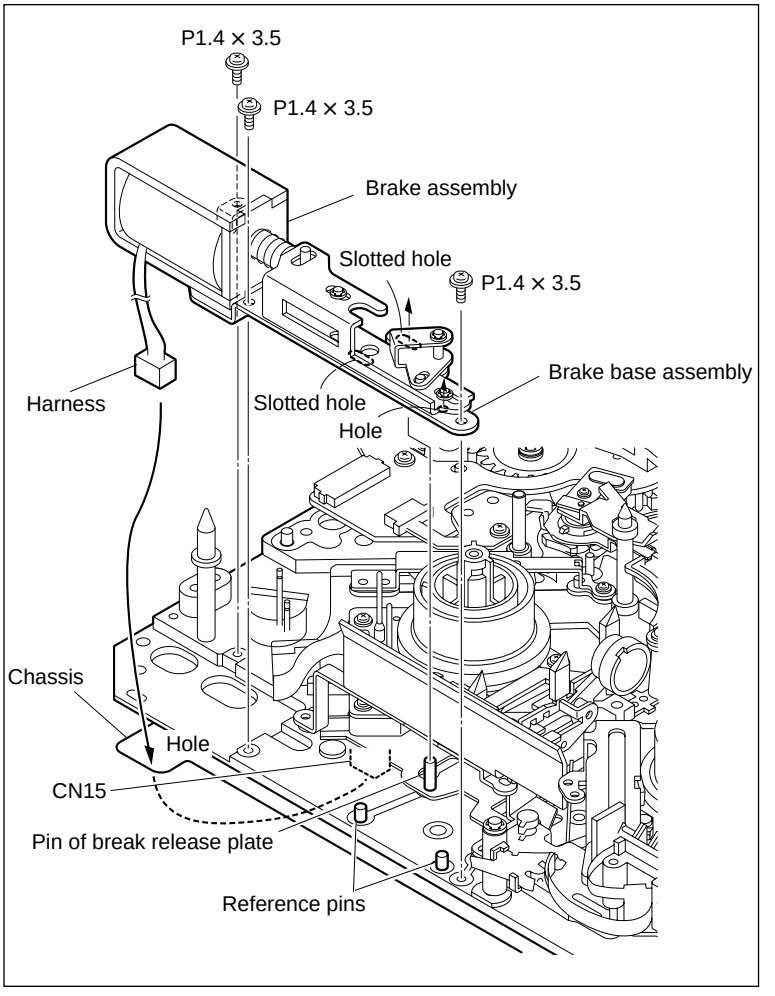
(8) Adjust the solenoid position to satisfy the specification of the clearance between the pin of the solenoid iron core and the slotted hole in the brake base assembly under the condition that the iron core is fully pulled in, and tighten securely the two screws, and apply screw locking compound.
Tightening Torque : 0.5 N•m {5 kgf•cm}

(9) Reattach the brake slider assembly to the brake base assembly with a new stop washer.



### 5. Reattaching the brake assembly

(1) Insert the harness of the brake assembly in a square hole on the left side of the chassis to bring it to the back side of the unit.
(2) Fit the slotted hole shown in the brake assembly figure on the pin on the brake release plate and further more fit the hole and slotted hole in the brake base assembly on the two reference pins of the MD chassis respectively, and fix it with the three screws.
Tightening Torque : 0.1 N•m {1 kgf•cm}




### 6. Reconnecting the connector

(1) Draw out the harness of the brake solenoid to bring it to the back side of the unit with tweezers.
(2) Reconnect the harness to the connector (CN15) on the DR-428 board.

### 7. Reattaching the frame assembly, MD

Reattach the frame assembly, MD.
(Refer to Section 7-2 Step 7.)

### 8. Checking the performance

(1) Power on the unit and press the [DEL], [TRIM+], [MENU] keys simultaneously to activate the maintenance menu.
(2) Following the pop-up menu in the maintenance menu, enter SERVO CHECK, PLUNGER CHECK, REEL BRAKE in order and select REEL BRAKE.
(3) Check that the brake solenoid ON/OFF switches smoothly by presing the [AUDIO IN] key and the [IN] key.

# 7-5. Pinch Roller Replacement

## Outline

### Replacement

Removing the pinch limiter assembly.
Reattaching the pinch limiter assembly.

### Adjustment after replacement

Checking the tape path adjustment

## Note

- The pinch roller is a part of the pinch limiter assembly, therefore replace the pinch limiter assembly itself when the pinch roller needs to be replaced.
- Prepare a new stop washer when replacing the pinch roller assembly.
  Stop washer (1.5) : 3-669-465-01

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Grease (SG-941) : 7-662-001-39
- Tweezers

## Replacement

### 1. Removing the pinch limiter assembly

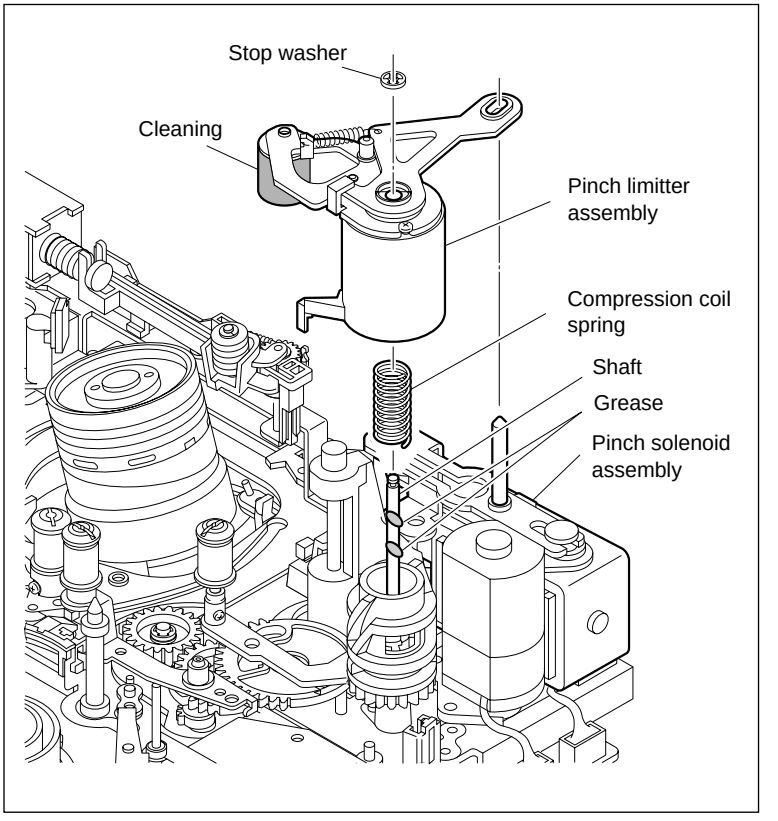
Remove the stop washer and remove the pinch limiter assembly.

**Note**

During this operation, if the compressed coil spring comes off together with the assembly, return the spring in place.

### 2. Reattaching the pinch limiter assembly

(1) Wipe a pinch roller in a new pinch limiter assembly with a cleaning cloth moistened with cleaning fluid.
(2) Wipe the shaft on the MD chassis with a cleaning cloth moistened with cleaning fluid.
(3) Apply grease about the quarter size of a tip of a cotton swab, to two portions of the shaft marked in the figure.
(4) Fit the hole in the pinch limiter assembly on the shaft on the MD chassis, while fitting the slotted hole in the pinch limiter assembly on the shaft on the pinch solenoid assembly, and fix it with a new stop washer (1.5).




## Adjustment after replacement

### 3. Checking the tape path adjustment

(Refer to Section 8-4.)

# 7-6. Elevator Cam Replacement

## Outline

### Replacement

Removing the pinch limiter assembly
Replacing the elevator cam
Reattaching the pinch limiter assembly

### Adjustment after replacement

Chacking the tape path adjustment

## Note

Prepare two kinds of new stop washers when replacing the elevator cam.
Stop washer (1.5) : 3-669-465-01 × 1 (for mounting the pinch limiter assembly)
Stop washer (2.3) : 3-669-596-01 × 1 (for mounting the elevator cam)

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Grease (SGL-941) : 7-662-001-39
- Tweezers

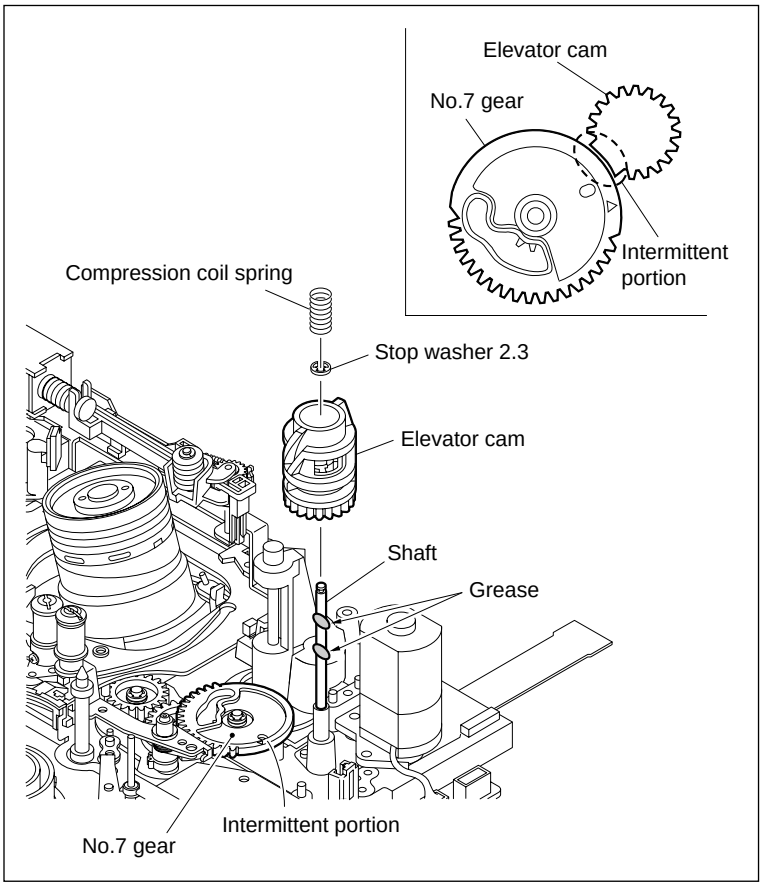
## Replacement

### 1. Removing the pinch limiter assembly

Remove the pinch limiter assembly.
(Refer to Section 7-5.)

### 2. Replacing the elevator cam

(1) Lift off the compressed coil spring from the shaft on the MD chassis.
(2) Remove the stop washer and remove the elevator cam.
(3) Wipe the shaft on the MD chassis with a cleaning cloth moistened with cleaning fluid.
(4) Fit the elevator cam on the shaft on the chassis with the intermittent portion of the elevator cam joined to the intermittent portion of the No.7 gear as shown in the figure.
(5) Apply grease about the quarter size of a tip of a cotton swab, to two portions of the shaft shown in the figure.
(6) Reattach the elevator cam with a new stop washer (2.3).
(7) Fit the compressed coil spring on the shaft.




### 3. Reattaching the pinch limiter assembly

Reattach the pinch limiter assembly.
(Refer to Section 7-5.)

## Adjustment after replacement

### 4. Checking the tape path adjustment.

(Refer to Section 8-4.)

# 7-7. Pinch Solenoid Assembly Replacement

## Outline

### Replacement

Removing the pinch limiter assembly.
Disconnecting the connector.
Replacing the pinch solenoid assembly.
Reconnecting the connector.
Reattaching the pinch limiter assembly.

### Adjustment after replacement

Checking the tape path adjustment

## Note

Without removal/reattachment of the pinch limiter assembly, the pinch solenoid assembly cannot be replaced.
Therefore prepare a new stop washer for replacing the pinch limiter assembly.
Stop washer (1.5) : 3-669-465-01 × 1

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver’s bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Tweezers

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## Replacement

### 1. Removing the pinch limiter assembly

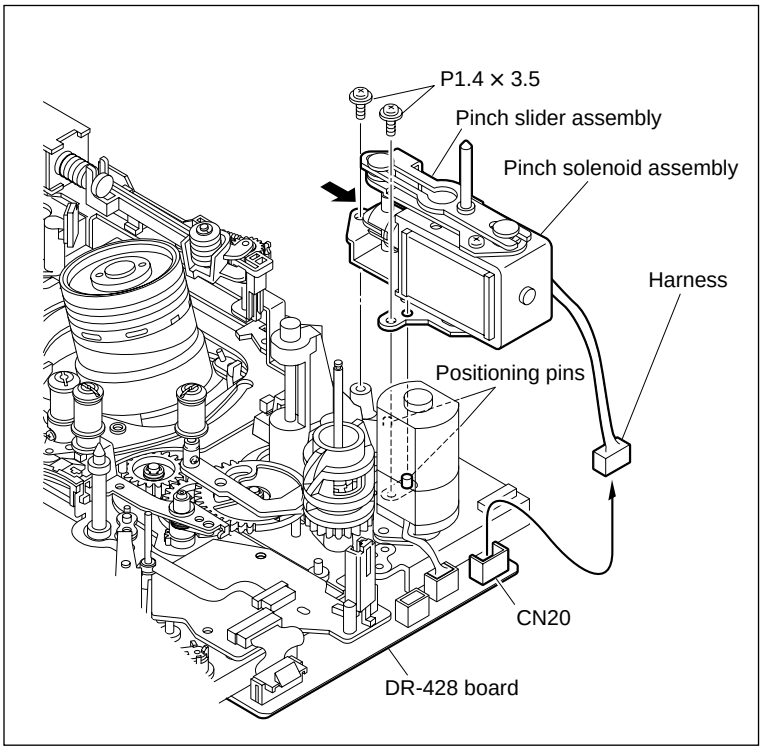
Remove the pinch limiter assembly.
(Refer to Section 7-5.)

### 2. Disconnecting the connectors

Disconnect the harness from the connector (CN20) on the DR-428 board with tweezers.

### 3. Replacing the pinch solenoid assembly

(1) Remove the two screws with the pinch slider assembly drawn into the arrow direction and lift off the pinch solenoid assembly.
(2) Align two holes in a new pinch solenoid assembly with the two positioning pins on the MD chassis respectively.
(3) Reattach the pinch solenoid utilizing the two screws with the pinch slider assembly drawn in the arrow direction.
Tightening Torque : 0.1 N•m {1 kgf•cm}




### 4. Reconnecting the connector

Reconnect the harness to the connector (CN20) on the DR-428 board with tweezers.

### 5. Reattaching the pinch limiter assembly

Reattach the pinch limiter assembly.
(Refer to Section 7-5.)

## Adjustment after replacement

### 6. Checking the tape path adjustment

(Refer to Section 8-4.)

# 7-8. Reel Motor (T) Assembly Replacement

## Outline

### Replacement

Removing the  frame assembly, MD
Disconnecting the connector
Moving the S/T reel tables
Removing the L push plate
Removing the MIC assembly
Removing the RMP (T1) retainer assembly
Replacing the reel motor (T) assembly
Reattaching the RMP (T1) retainer assembly
Reattaching the MIC assembly
Reattaching the L push plate
Reconnecting the connector
Checking the performance
Reattaching the frame assembly, MD

### Adjustment after replacement

T-REEL ONLY adjustment
TENSION adjustment
Tape path adjustment

## Note

Without removal/reattachment of the MIC assembly, the reel motor (T) assembly cannot be replaced. Prepare a new stop washer when reattaching the MIC assembly.
Stop washer (1.5) : 3-669-465-01 × 1
Use care not to lose the polyethylene washer between the base plate and the MIC assembly.

## Preparation

1. Set the unit to the unthreading end status after the unit to the standard cassette position.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver's bit (for M2) : J-6325-380-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01

## Replacement

### 1. Removing the frame assembly, MD

Remove the frame assembly, MD.
(Refer to Section 7-2 Step 1.)

### 2. Disconnecting the connector

Disconnect the flexible card wire from the connector (CN17) on the DR-428 board located on the back side of the MD chassis.

### 3. Moving the S/T reel tables

Turn the reel shift motor gear by the bamboo skewer and bring the S/T reel tables to the standard cassette position.
(Refer to Section 7-19.)

### 4. Removing the L push plate

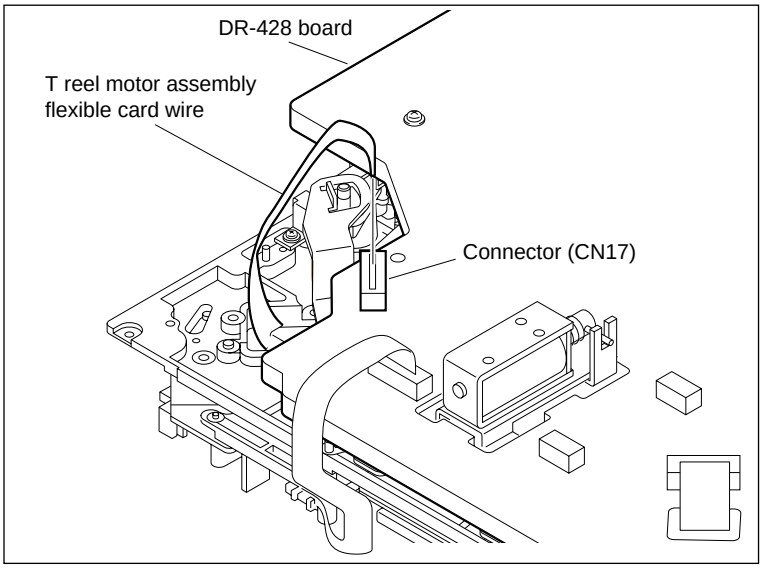
Remove the L push plate. (Refer to Section 7-3.)

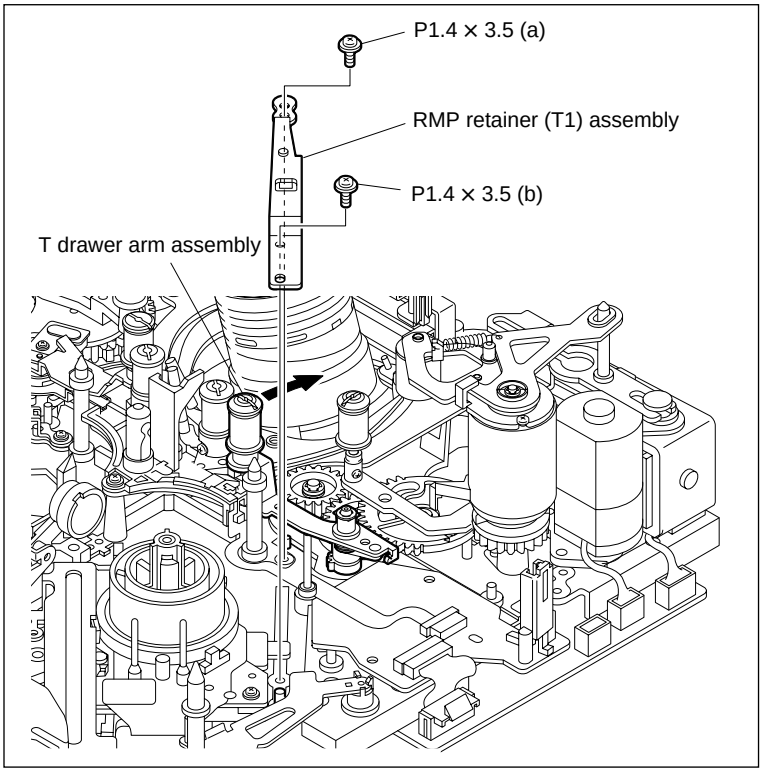
### 5. Removing the MIC assembly

Remove the MIC assembly.
(Refer to Section 7-19.)

### 6. Removing the RMP (T1) retainer assembly

(1) Remove the screw (a) with the T-drawer arm assembly drawn lightly in the arrow direction.
(2) Remove the screw (b) and remove the RMP (T1) retainer assembly.



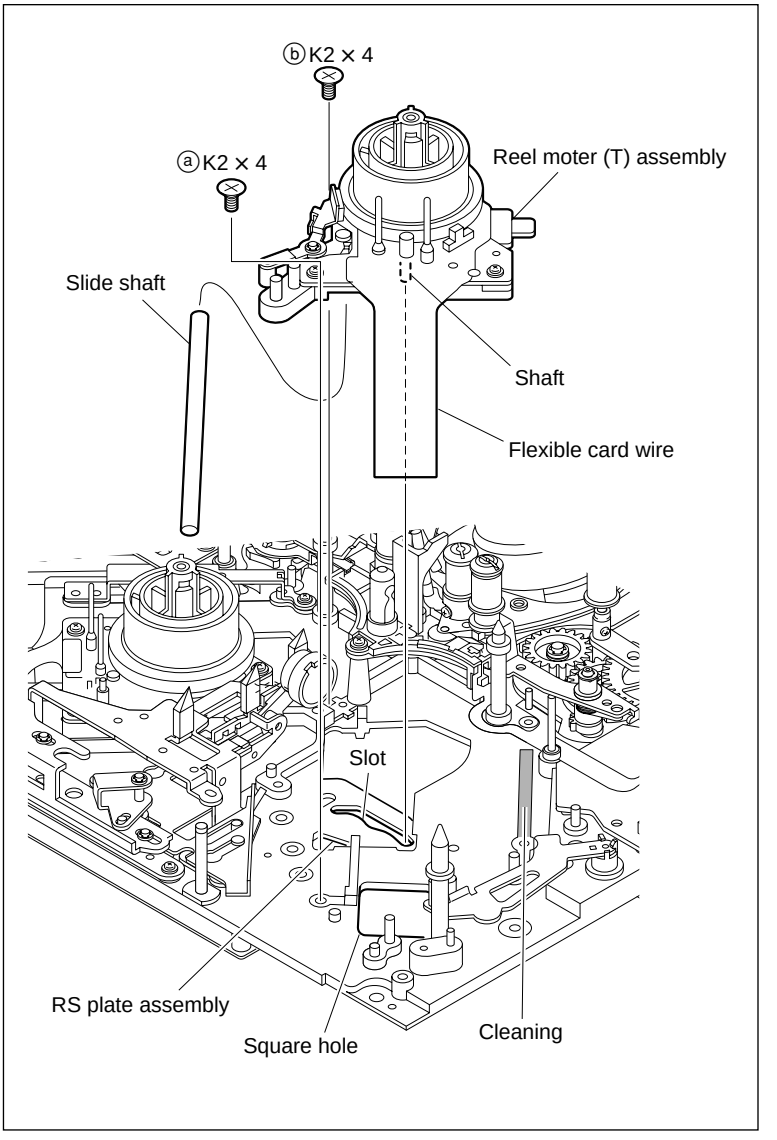
### 7. Replacing the reel motor (T) assembly

(1) Remove the two screws (ⓐ, ⓑ) securing the slide shaft and remove the reel motor (T) assembly.
(2) Extract the slide shaft from the reel motor (T) assembly.
(3) Wipe the shaded portion in the figure with a cleaning cloth moistened with cleaning fluid.
(4) Apply grease about the quarter size of a tip of a cotton swab, to the center of the shaded portion.
(5) Wipe the slide shaft with dry cloth such as gauze, and then insert it in a hole of a new reel motor T assembly.

**Note**

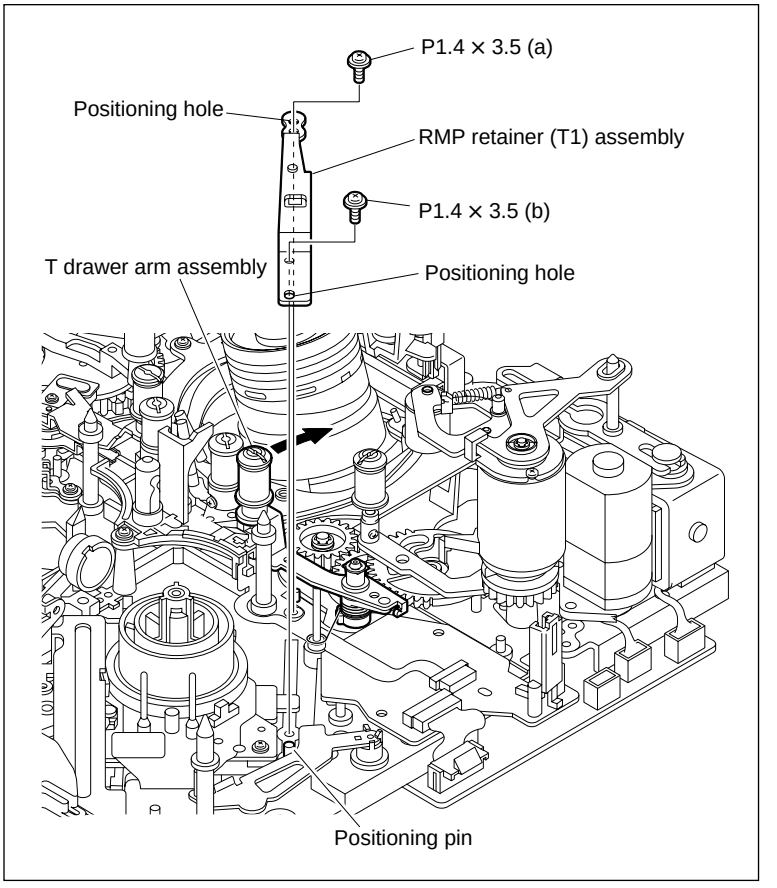
Use extreme care not to scratch the shaft and hole during extracting and inserting operation.

(6) Insert a shaft located on the back side of the reel motor (T) assembly in the slot in the RS plate assembly.
(7) Insert the flexible card wire in the square hole in the MD chassis.
(8) Tighten the screw ⓐ and next ⓑ to reattach the slide shaft.
Tightening Torque : 0.1 N•m {1 kgf•cm}



### 8. Reattaching the RMP (T1) retainer assembly

(1) Fit the two positioning holes in the RMP (T1) retainer assembly on the two positioning pins on the MD chassis.
(2) Tighten the two screws to fix the RMP (T1) retainer assembly while drawing lightly the T drawer arm assembly in the arrow direction.




### 9. Reattaching the MIC assembly

Reattach the MIC assembly.
(Refer to Section 7-19.)

### 10. Reattaching the L push plate

Reattach the L push plate. (Refer to Section 7-3.)

### 11. Reconnecting the connector

Reconnect the flexible card wire to the connector (CN17) on the DR-428 board located on the back side of the MD chassis.

**Notes**

- Be careful not to insert the flexible card wire obliquely.
- Do insert the flexible card wire straight and securely as far as it will go.
- Take care not to fold the flexible card wire. This shortens the life of the flexible card wire.

### 12. Checking the performance

Check the S/T reel tables move smoothly by turning the reel shift motor gear by the bamboo skewer. (Refer to Section 7-19.)

### 13. Reattaching the frame assembly, MD

Reattach the frame assembly, MD.
(Refer to Section 7-2 Step 7.)

---

**Adjustment after replacement**

### 14. T-REEL ONLY adjustment

(Refer to Section 5-3-3.)

### 15. TENSION adjustment

(Refer to Section 5-3-3.)

### 16. Tape path adjustment

(Refer to Section 8-2.)

# 7-9. Reel Motor (S) Assembly Replacement

## Outline

### Replacement

Removing the frame assembly, MD
Disconnecting the connector
Moving the S/T reel tables
Removing the RMP (S1) retainer assembly
Replacing the reel motor (S) assembly
Reattaching the RMP (S1) retainer assembly
Reconnecting the connector
Checking the performance
Reattaching the frame assembly, MD

### Adjustment after replacement

S-RELL ONLY adjustment
TENSION adjustment
Tape path adjustment

## Preparation

1. Set the unit to the unthreading end status after the unit to the standard cassette position.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver's bit (for M2) : J-6325-380-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01

## Replacement

### 1. Removing the frame assembly, MD

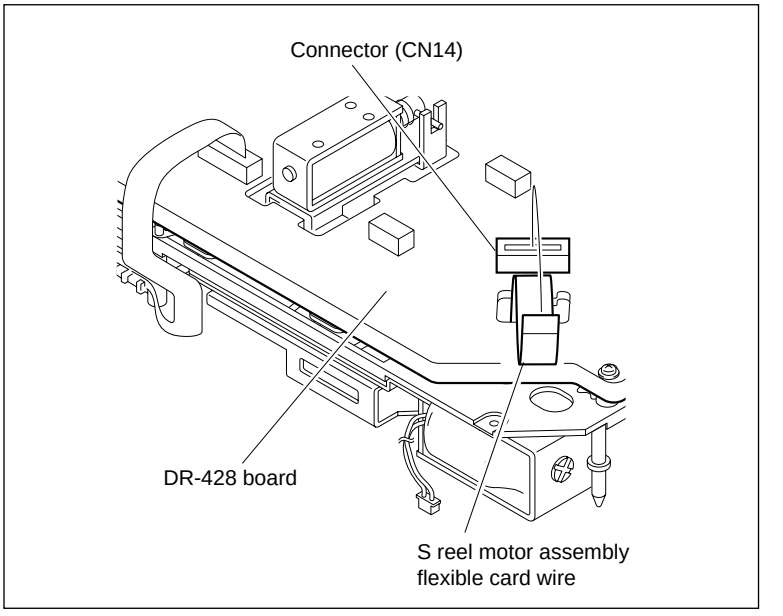
Remove the frame assembly, MD.
(Refer to Section 7-2 Step 1.)

### 2. Disconnecting the connector

Disconnect the flexible card wire from the connector (CN14) on the DR-428 board located on the back side of the MD chassis.

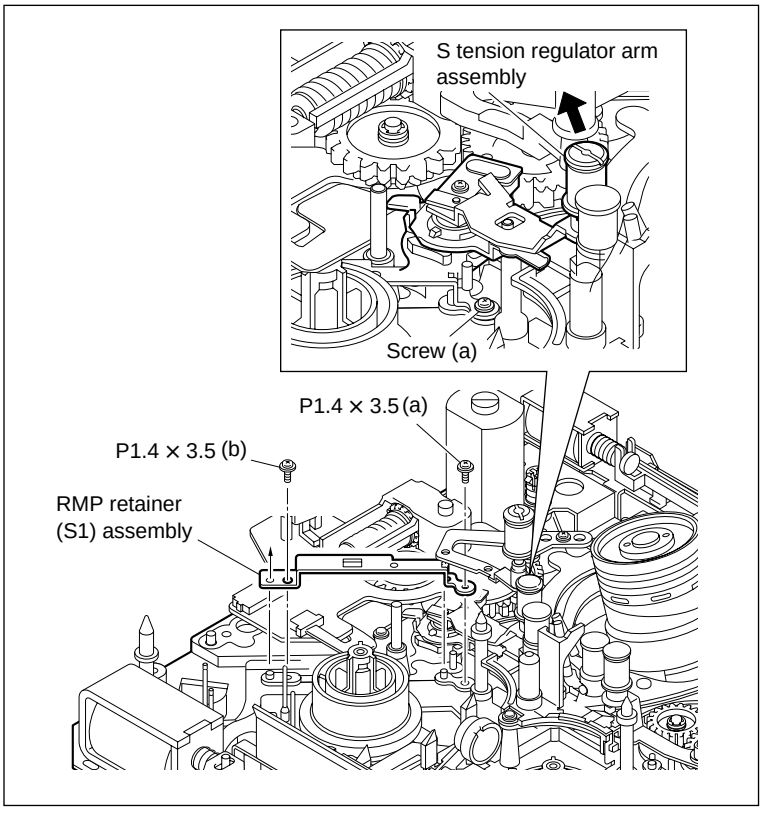
### 3. Moving the S/T reel tables

Turn the reel shift motor gear by the bamboo skewer and bring the S/T reel tables to the standard cassette position. (Refer to Section 7-19.)




### 4. Removing the RMP (S1) retainer assembly

(1) Remove the screw (a) with the S tension regulator arm assembly drawn lightly in the arrow direction.
(2) Remove the screw (b), then remove the RMP (S1) retainer assembly.



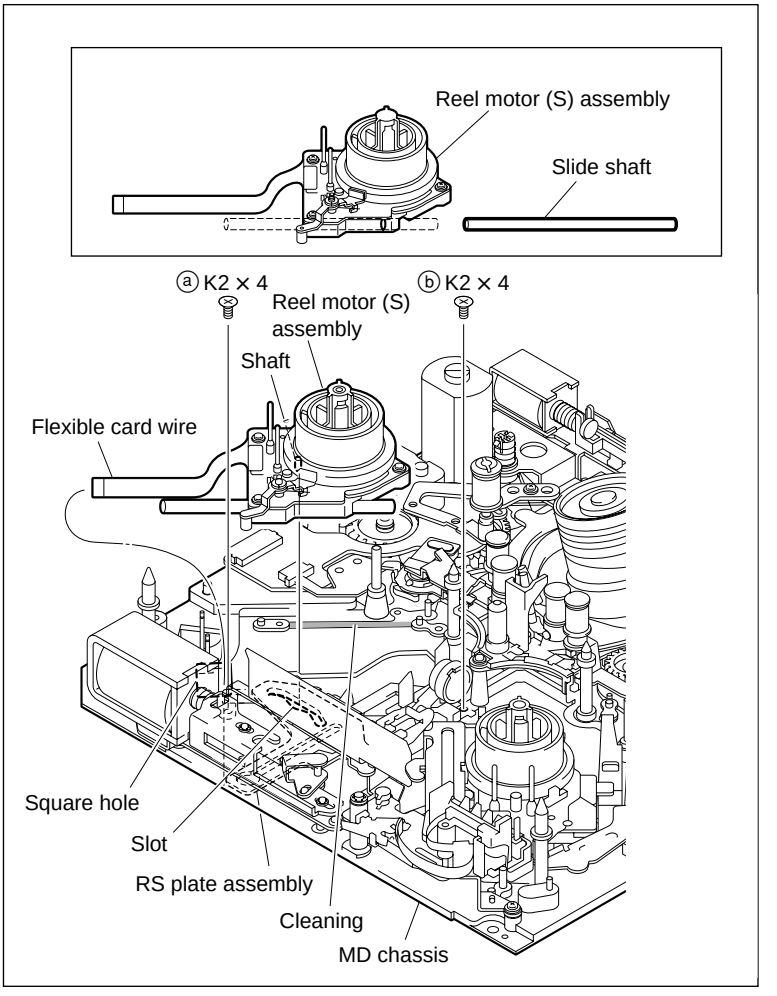
### 5. Replacing the reel motor (S) assembly

(1) Remove the two screws (ⓐ, ⓑ) securing the slide shaft and remove the reel motor (S) assembly.
(2) Extract the slide shaft from the reel motor (S) assembly.
(3) Wipe the shaded portion in the figure with a cleaning cloth moistened with cleaning fluid.
(4) Apply grease about the quarter size of a tip of a cotton swab, to the center of the shaded portion.
(5) Wipe the slide shaft with dry cloth such as gauze, and then insert it in a hole of a new reel motor S assembly.

**Note**

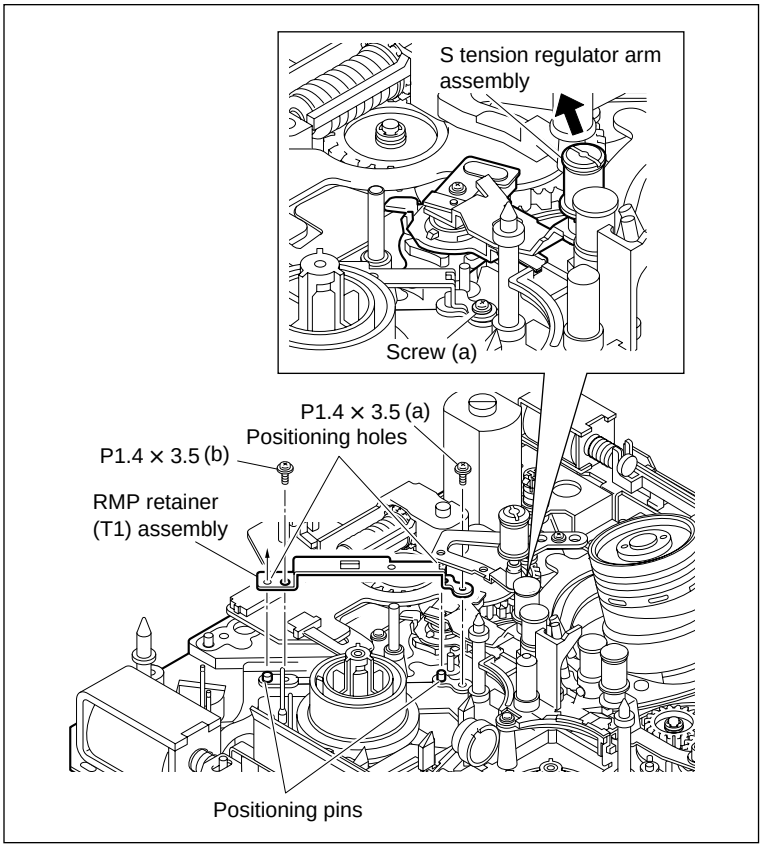
Use extreme care not to scratch the shaft and hole during extracting and inserting operation.

(6) Insert a shaft located on the back side of the reel motor (S) assembly in the slot in the RS plate assembly.
(7) Insert the flexible card wire in the square hole in the MD chassis.
(8) Tighten the screw ⓐ and next ⓑ to reattach the slide shaft.
Tightening Torque : 0.1 N•m {1 kgf•cm}



### 6. Reattaching the RMP (S1) retainer assembly

(1) Fit the two positioning holes in the RMP (S1) retainer assembly on the two positioning pins on the MD chassis.
(2) Tighten the two screws to fix the RMP (S1) retainer assembly while drawing lightly the S tension regulator arm assembly in the arrow direction.




### 7. Reconnecting the connector

Reconnect the flexible card wire to the connector (CN14) on the DR-428 board located on the back side of the MD chassis.

**Notes**

- Be careful not to insert the flexible card wire obliquely.
- Do insert the flexible card wire straight and securely as far as it will go.
- Take care not to fold the flexible card wire. This shortens the life of the flexible card wire.

### 8. Checking the performance

Check the S/T reel tables move smoothly by turning the reel shift motor gear by the bamboo skewer. (Refer to Section 7-19.)

### 9. Reattaching the frame assembly, MD

Reattach the frame assembly, MD.
(Refer to Section 7-2 Step 7.)

---

**Adjustment after replacement**

### 10. S-REEL ONLY alignment

(Refer to Section 5-3-3.)

### 11. TENSION alignment

(Refer to Section 5-3-3.)

### 12. Tape path adjustment

(Refer to Section 8-2.)

# 7-10. M Stop Solenoid Assembly Replacement

## Outline

### Replacement

Removing the frame assembly, MD
Removing the stopper driving plate (M) assembly
Replacing the M stop solenoid assembly
Reattaching the stopper driving plate (M) assembly
Reattaching the frame assembly, MD

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top plate. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver’s bit (for M1.4) : J-6325-110-A
- Torque screwdriver’s bit (for M2) : J-6325-380-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Screw locking compound : 7-432-114-11

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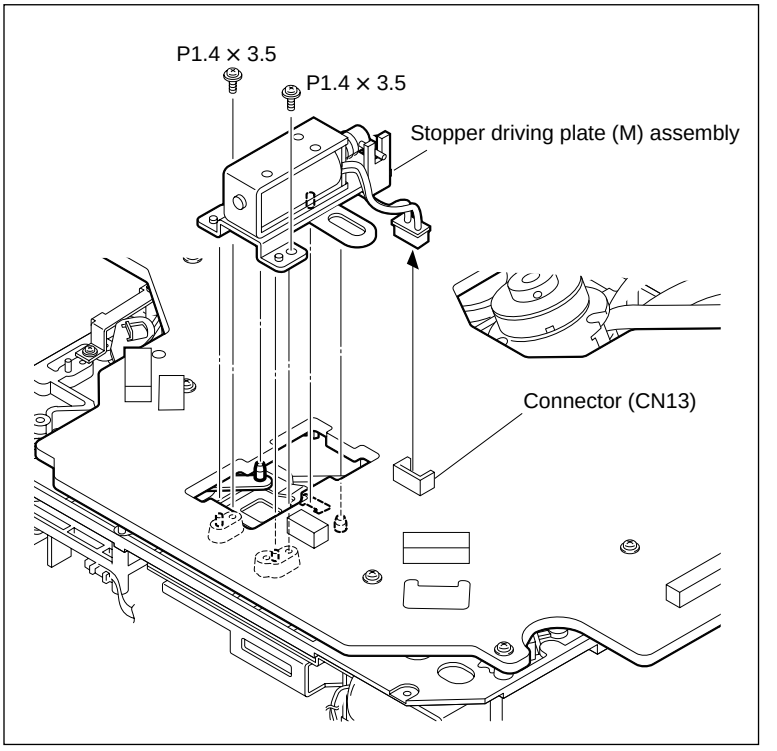
## Replacement

### 1. Removing the frame assembly, MD

Remove the frame assembly, MD.
(Refer to Section 7-2 Step 1.)

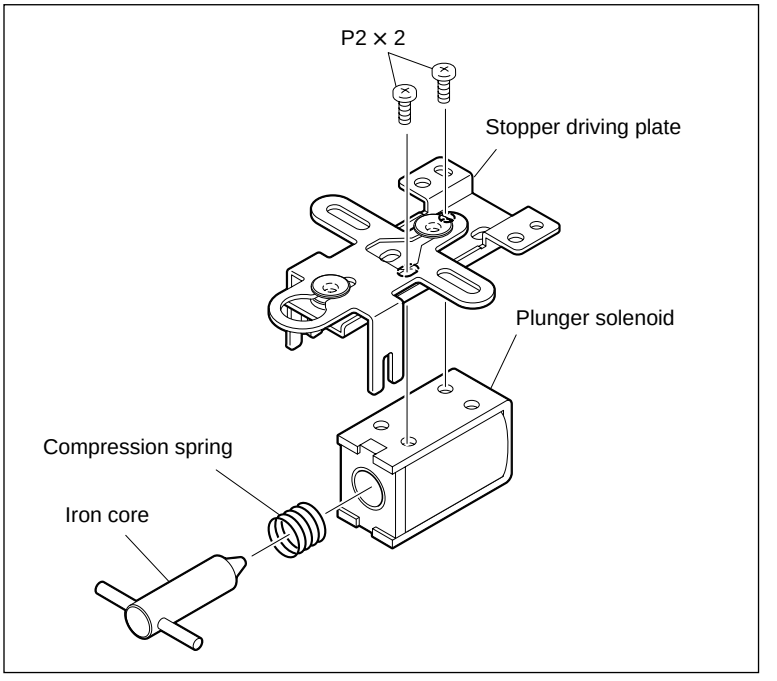
### 2. Removing the stopper driving plate (M) assembly

(1) Disconnect the harness of the M stop solenoid assembly from the connector (CN13) on the DR-428 board.
(2) Remove the two screws and remove the stopper driving plate (M) assembly.

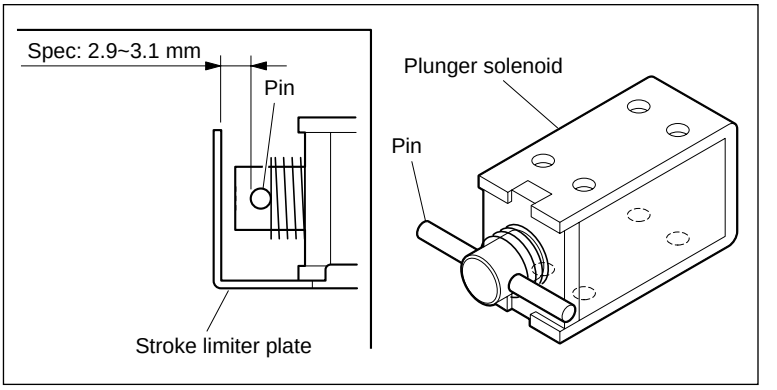



### 3. Replacing the M stop solenoid assembly

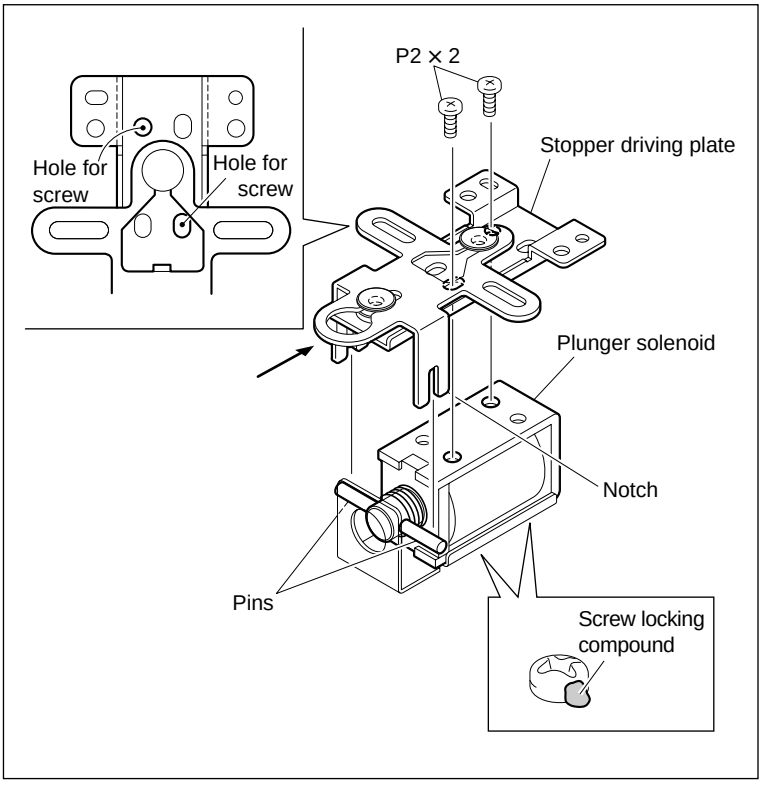
(1) Remove the two screws to remove the stopper driving plate (M) assembly.
(2) Remove the two screws to remove the plunger solenoid from the stroke limiter plate.
(3) Extract the compressed coil spring from the iron core of the plunger solenoid removed in step (2) and fit the spring on a new solenoid iron core.



(4) Temporally fix the new plunger solenoid to the stroke limiter plate with the two screws.
(5) Adjust the clearance between the pin of the plunger solenoid and the stroke limiter plate as shown in the figure to meet the specification below, and tighten the two screws securely. After tightening, apply screw locking compound.
Tightening Torque : 0.2 N•m {2 kgf•cm}




(6) Fit the two notches of the stopper driving plate on both ends of the iron-core pin, then reattach the stopper driving plate to the plunger solenoid by the two screws.
Tightening Torque : 0.2 N•m {2 kgf•cm}
(7) Ensure the stopper driving plate returns to the original position after being pressed in the arrow direction and released.



### 4. Reattaching the stopper driving plate (M) assembly

(1) Move the shaft b on the M stopper (T) assembly and the shaft c on the M stopper (S) assembly toward the drum by a finger.

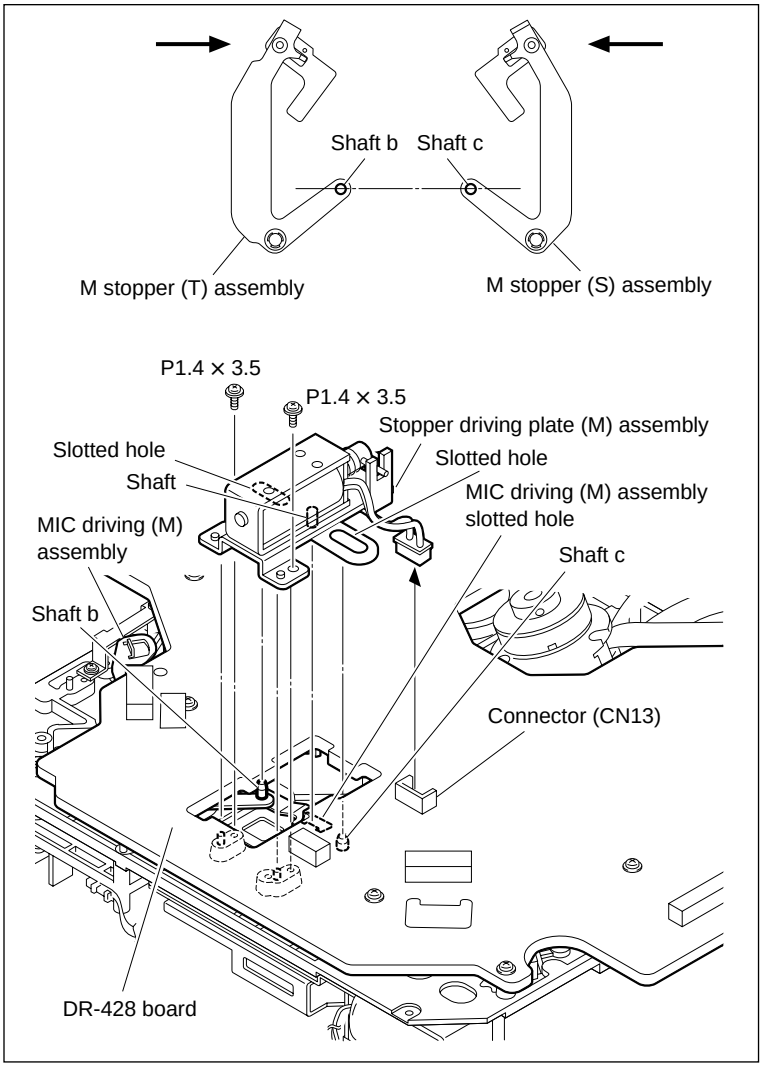
(2) Insert the shaft located on the back side of the stopper driving plate (M) assembly in the slotted hole in the MIC drive (M) assembly. Fit the two slotted holes in the stopper driving plate (M) assembly shown in the figure on the shafts on M stopper (T) and (S) assemblies, and then fix it on the MD chassis with the two screws.
Tightening Torque : 0.1 N•m {1 kgf•cm}

(3) Ensure that the M stopper (T) and (S) assemblies and MIC drive (M) assembly move smoothly with the iron core of the solenoid drawn in the pulled-in direction.

(4) Reconnect the harness of the M stop solenoid to the connector (CN13) on the DR-428 board.

### 5. Reattaching the frame assembly, MD

Reattach the frame assembly, MD.
(Refer to Section 7-2 Step 7.)



# 7-11. S Tension Regulator Assembly Replacement

## Outline

### Replacement

Removing the TG1 arm assembly
Removing the loading motor assembly
Removing the SE-521 board
Replacing the S tension regulator assembly
Reattaching the SE-521 board
Reattaching the loading motor assembly
Reattaching the TG1 arm assembly
Cleaning the tape guide

### Adjustment after replacement

TENSION adjustment
Tape path adjustment

## Notes

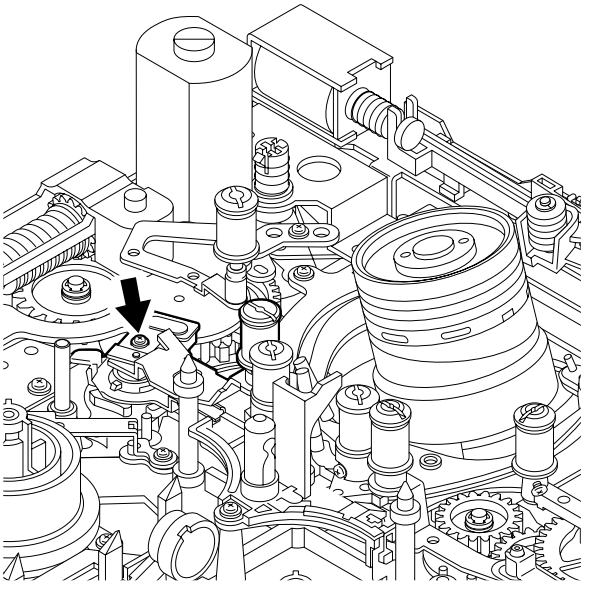
Use extreme care not to scratch the drum when replacing the S tension regulator assembly.
Never loosen the screw shown in the figure. If the screw is loosened, replace the S tension regulator with a new one.

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque driver's bit (for M1.4) : J-6325-110-A
- Torque driver (for 3 kgf•cm) : J-6325-400-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Tweezers



## Replacement

### 1. Removing the TG1 arm assembly

Remove the TG1 arm assembly.
(Refer to Section 7-13.)

### 2. Removing the loading motor assembly

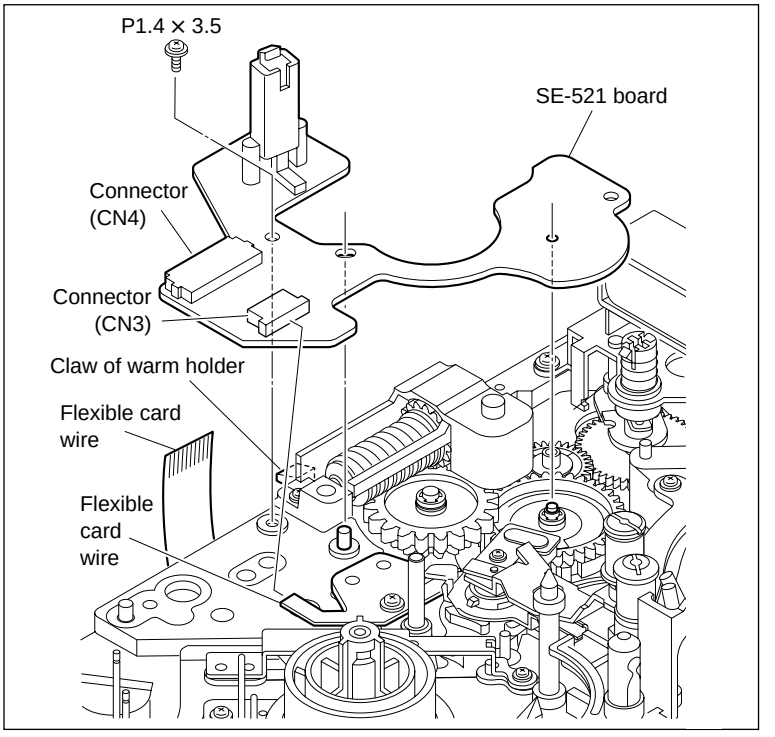
Remove the loading motor assembly.
(Refer to Section 7-17.)

### 3. Removing the SE-521 board

(1) Disconnect the flexible card wire from the connector (CN3) on the SE-521 board.
(2) Disconnect the flexible card wire from the connector (CN4) on the SE-521 board.
(3) Remove the screw and remove the SE-521 board.

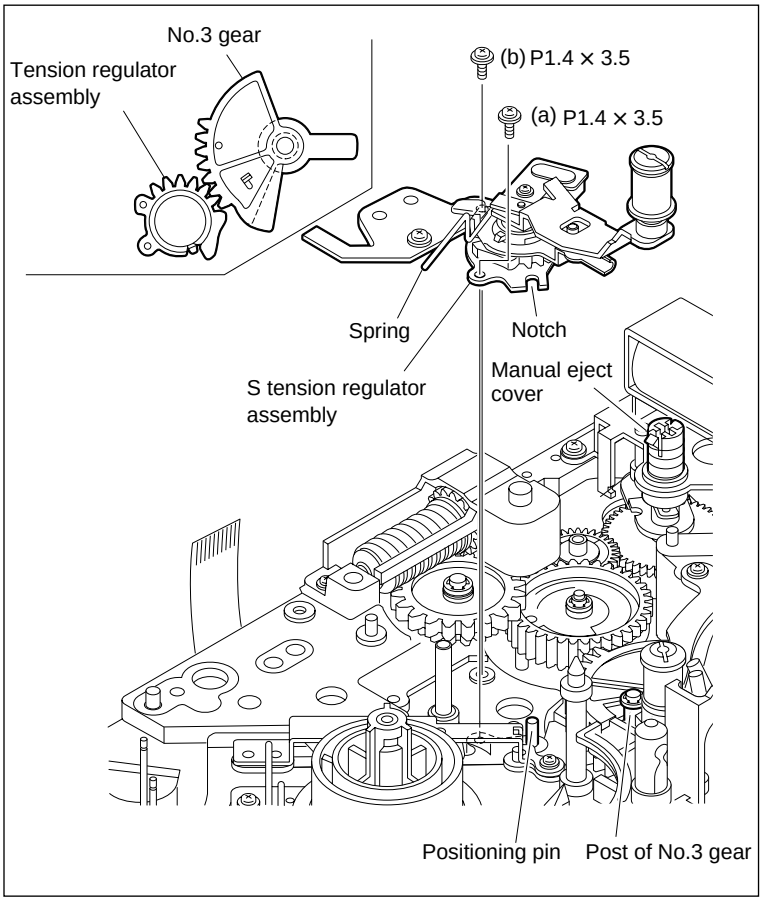
**Note**

Use care about the claw of the worm holder.




### 4. Replacing the S tension regulator assembly

(1) Remove the S tension regulator assembly by removing the two screws.
(2) Turn the manual eject cover clockwise until No.3 gear comes to the position shown in the figure.
(3) Engage a gear on a new S tension regulator assembly with No.3 gear as shown in the figure, and align the notch of the S tension regulator with the positioning pin on the chassis, then attach the new assembly to the chassis with the screw (a).
(4) Turn the manual eject cover counterclockwise to bring to the unthreading end position.
(5) Reattach the S tension regulator assembly to the MD chassis with the screw (b).
Tightening Torque : 0.1 N•m {1 kgf•cm}
(6) Turn the manual eject cover clockwise to enter the threading condition. At this operation, check the two points below.
The spring of the S tension regulator assembly shown in the figure do not contact the post of No.3 gear.
The column pushes the spring under unthreading end status.
Unless satisfy these conditions, perform the step (2) and after.
(7) Turn the manual eject cover counterclockwise to bring to the unthreading end position.



### 5. Reattaching the SE-521 board

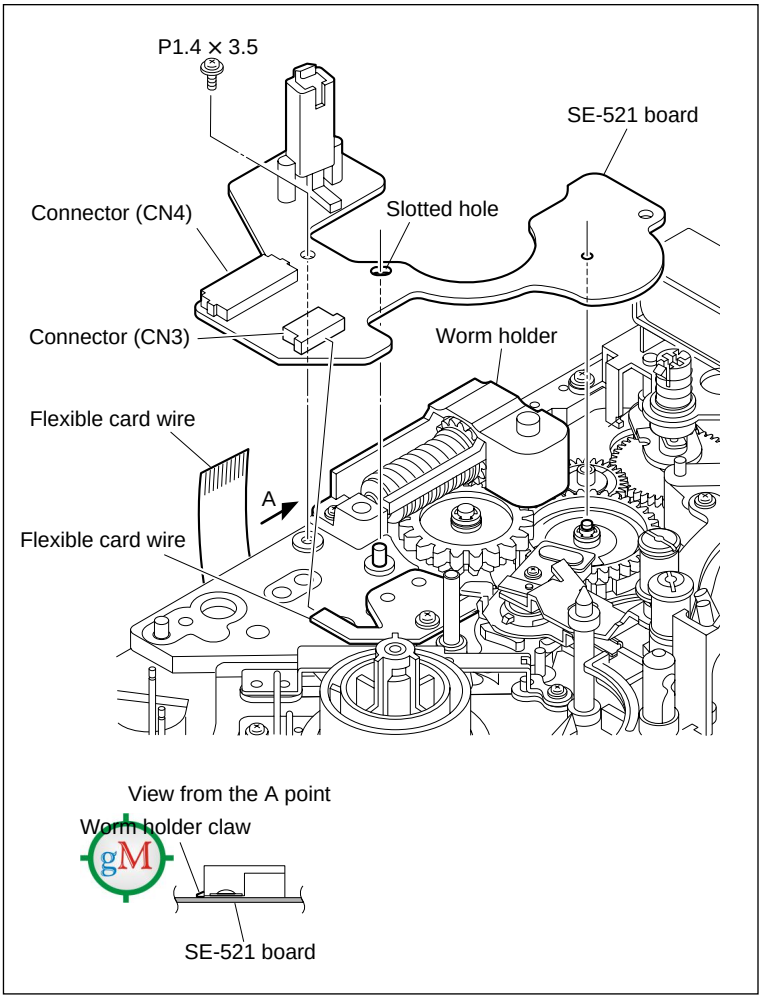
(1) Fit the hole and slotted hole on the SE-521 board on the two shafts on the MD chassis respectively and fix it with the screw.

**Notes**

- At this operation, be careful not to pinch the tip of the flexible card wire of the S tension regulator assembly between the SE-521 board and the chassis.
- Insert the SE-521 board under the claw of the worm holder.

(2) Reconnect the flexible card wire to the connector (CN4) on the SE-521 board.

(3) Reconnect the flexible card wire of the S tension regulator assembly to the connector (CN3) on the SE-521 board.




### 6. Reattaching the loading motor assembly

Reattach the loading motor assembly.
(Refer to Section 7-17.)

### 7. Reattaching the TG1 arm assembly

Reattach the TG1 arm assembly.
(Refer to Section 7-13.)

### 8. Cleaning the tape guide

Wipe the tape guides of the S tension regulator and the TG1 arm assemblies with a cleaning cloth moistened with cleaning fluid.

---

**Adjustment after replacement**

### 9. TENSION adjustment

(Refer to Section 5-3-3.)

### 10. Tape path adjustment

(Refer to Section 8-2.)

# 7-12. T Drawer Arm Assembly Replacement

## Outline

### Replacement

Removing the T drawer arm assembly
Checking the mounting position of the T gear
Reattaching the T drawer arm assembly
Cleaning the tape guide

### Adjustment after replacement

Checking the tape path adjustment

## Note

Use extreme care no to scratch the drum when replacing the T drawer arm assembly.

## Preparation

1. Let the unit into the unthreading position.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Tweezers

## Replacement

### 1. Removing the T drawer arm assembly

(1) Remove the stop washer from the shaft on the MD chassis and remove the T drawer arm assembly.
(2) Remove the portion “a” of the T spring shown in the figure from the notch in the T drawer arm assembly with tweezers.
(3) Remove the T drawer arm assembly.

### 2. Checking the mounting position of the T gear

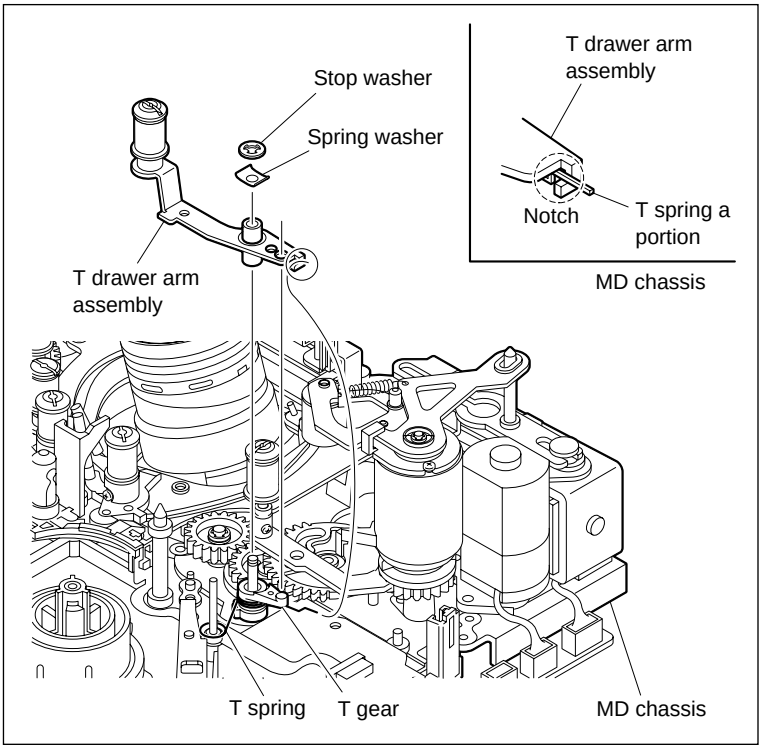
Check that the engagement between the T gear and No. 6 gear is in the position shown in the figure.

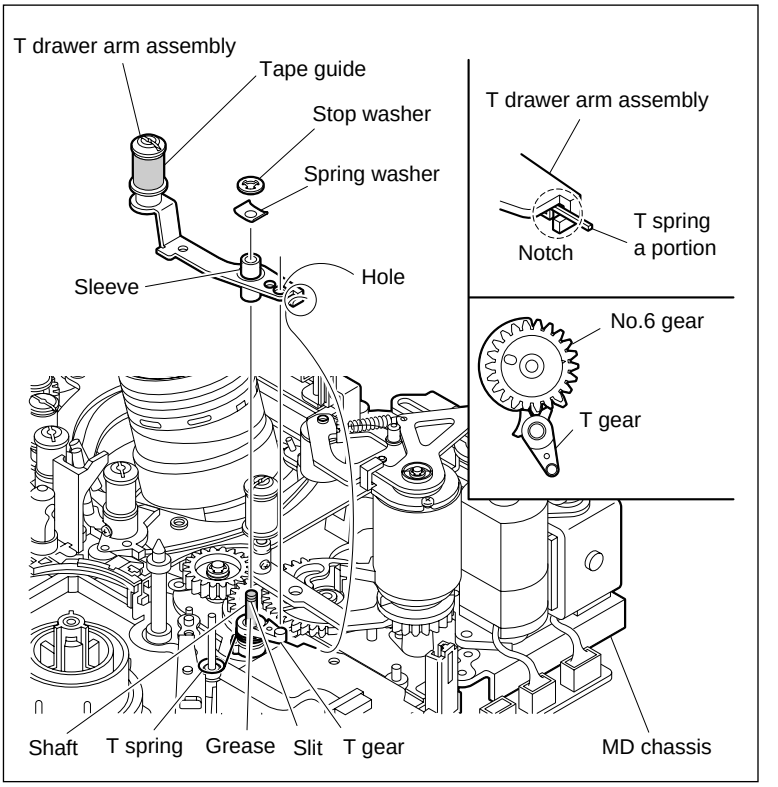
### 3. Reattaching the T drawer arm assembly

(1) Apply grease above 1/3 size of a tip of a cotton swab, to the shaft on the MD chassis.
(2) Fit a new T drawer arm assembly on the shaft and fit the hole in the T drawer arm assembly on the protrusion on the T gear.
(3) Hook again the portion “a” of the T spring unhooked in step 1- (2) on the notch in the T drawer arm assembly with tweezers.
(4) Fit the spring washer on the shaft on the MD chassis and fix it with the stop washer.

### 4. Cleaning the tape guide

Wipe the tape guide on the T drawer arm assembly with a cleaning cloth moistened with cleaning fluid.




## Adjustment after cleaning

### 5. Checking the tape path adjustment

(Refer to Section 8-4.)

# 7-13. TG1 Arm Assembly Replacement

## Outline

### Replacement

Replacing the TG1 arm assembly
Cleaning the tape guide

### Adjustment after replacement

TENSION adjustment
Checking the tape path adjustment

## Note

Do avoid touching with bare hands to the tape cleaner a part of in TG1 arm assembly. Sharpness of the edge on the tape cleaner may cause a hand cut, therefore use extreme care when replacing the TG1 arm assembly.

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

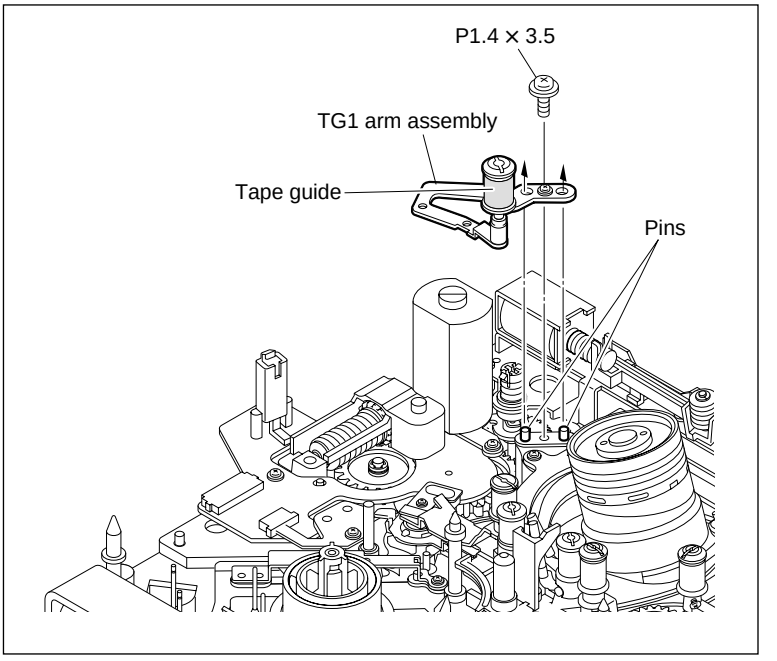
## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01

## Replacement

### 1. Replacing the TG1 arm assembly

(1) Remove the screw and remove the TG1 arm assembly from the MD chassis.
(2) Fit two holes in a new TG1 arm assembly on the two pins on the MD chassis respectively and fix the assembly with the screw.
Tightening Torque : 0.1 N•m {1 kgf•cm}




### 2. Cleaning the tape guide

Wipe the tape guide on the TG1 arm assembly with a cleaning cloth moistened with cleaning fluid.

## Adjustment after replacement

### 3. TENSION adjustment

(Refer to Section 5-3-3.)

### 4. Checking the tape path adjustment

(Refer to Section 8-4.)

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# 7-14. TG8 Arm Assembly Replacement

## Outline

### Replacement

Replacing the TG8 arm assembly
Cleaning the tape guide

### Adjustment after replacement

Checking the tape path adjustment

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

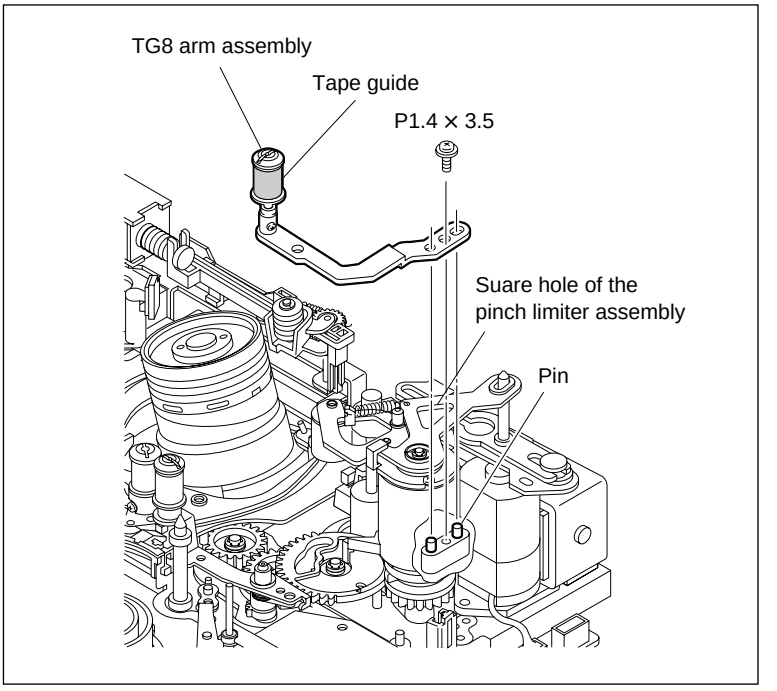
- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Tweezers

## Replacement

### 1. Replacing the TG8 arm assembly

(1) Insert a torque screwdriver through the square hole of the pinch limiter assembly to access the screw securing TG8 arm assembly. Remove the screw to remove the TG8 arm assembly.

(2) Fit a hole and a slotted hole in a new TG8 arm assembly on the two pins on the MD chassis and fix it with the screw.
Tightening Torque : 0.1 N•m {1 kgf•cm}




### 2. Cleaning the tape guide

Wipe the tape guide on the TG8 arm assembly with a cleaning cloth moistened with cleaning fluid.

## Adjustment after replacement

### 3. Adjustment after replacement

Checking the tape path adjustment
(Refer to Section 8-4.)

# 7-15. Rail Assembly Replacement

## Outline

### Replacement

Moving the S/T reel tables
Removing the S tension regulator assembly
Removing the T drawer arm assembly
Removing the RMP retainer (T1) assembly
Removing the head cleaner assembly
Removing the rail assembly
Reattaching the rail assembly
Reattaching the head cleaner assembly
Reattaching the RMP retainer (T1) assembly
Reattaching the T drawer arm assembly
Reattaching the S tension regulator assembly
Checking the threading/unthreading performance
Cleaning the tape guide

### Adjustment after replacement

TENSION adjustment
Tape path adjustment

## Note

Use extreme care not to scratch the drum and the tape guide when replacing the rail assembly.

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Tweezers

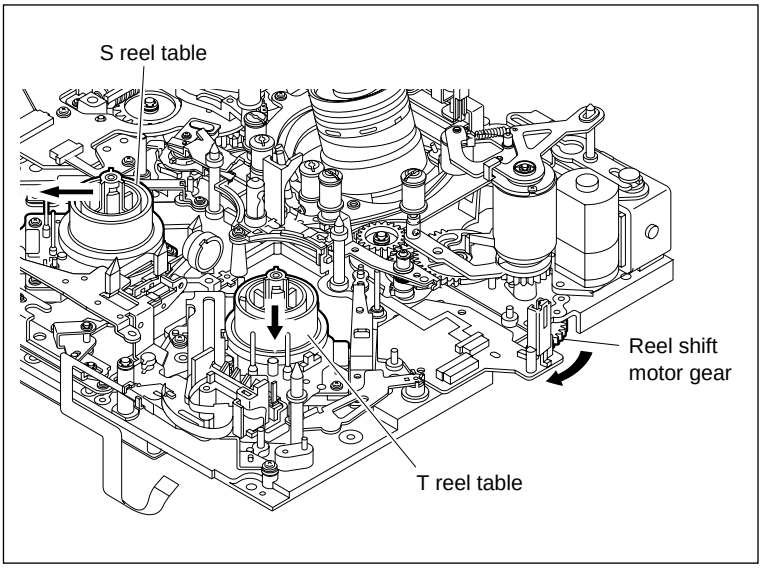
## Replacement

### 1. Moving the S/T reel tables

Bring the S/T reel tables to the L cassette position (the most front side) by turning the reel shift motor gear in the arrow direction by a finger.

**Reference**

This provides easy operation of succeeding tasks.




### 2. Removing the S tension regulator assembly

Remove the S tension regulator assembly. (Refer to Section 7-11.)

### 3. Removing the T drawer arm assembly

Remove the T drawer arm assembly. (Refer to Section 7-12.)

### 4. Removing the RMP retainer (T1) assembly

Remove the two screws and remove the RMP retainer (T1) assembly.

### 5. Removing the head cleaner

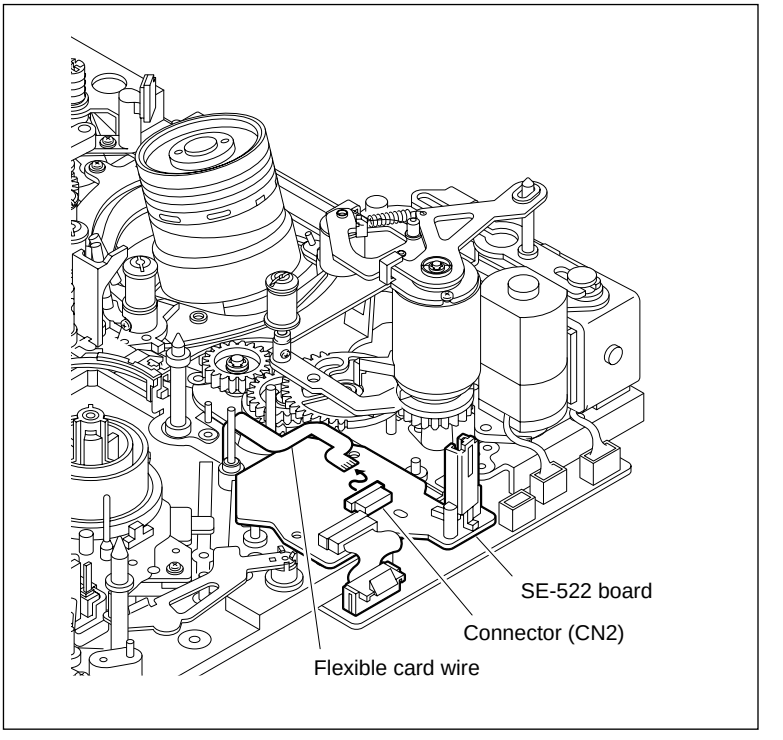
Remove the head cleaner. (Refer to Section 7-21.)

### 6. Removing the rail assembly

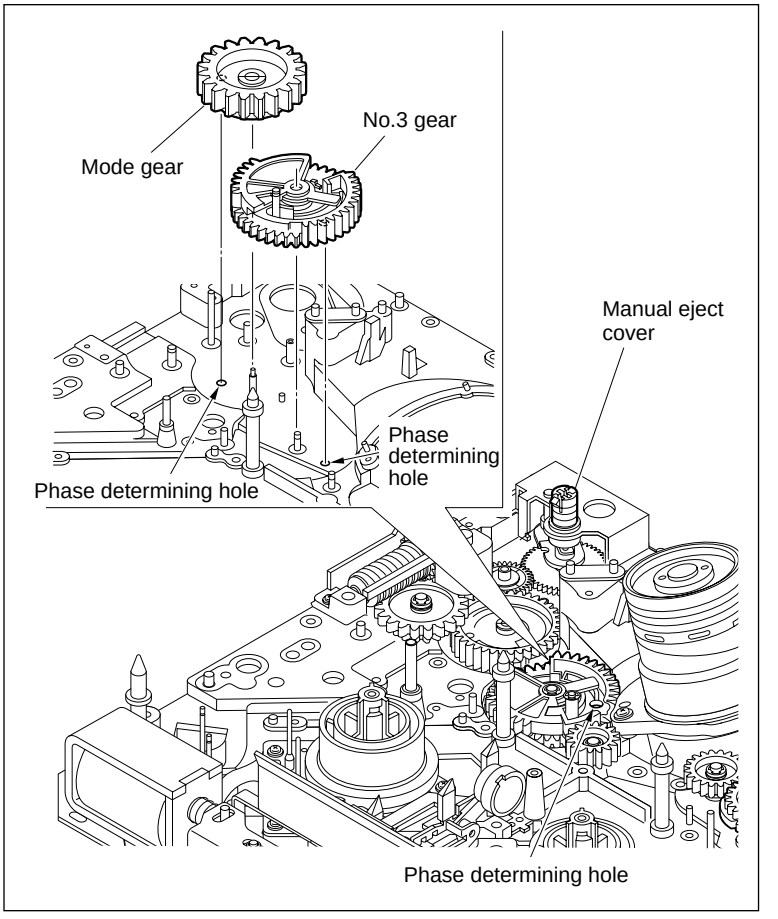
(1) Disconnect the flexible card wire from the connector (CN2) on the SE-522 board.

**Note**

Use extreme care not to fold and not to scratch the flexible card wire when disconnecting.



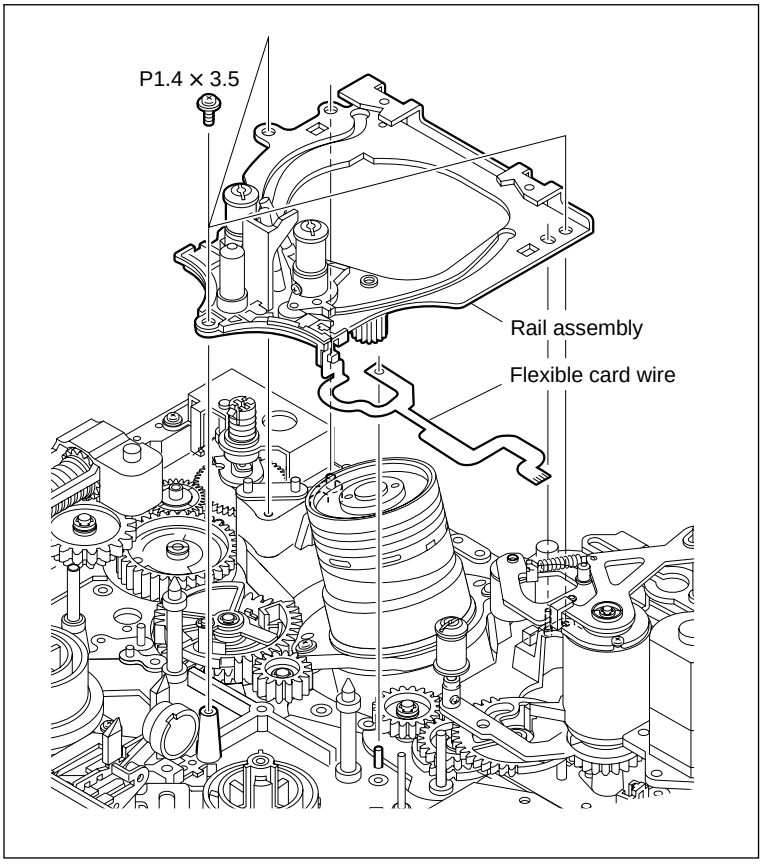
(2) Turn the manual eject cover clockwise and align the two phase determining holes in the mode gear assembly and in No.3 gear.



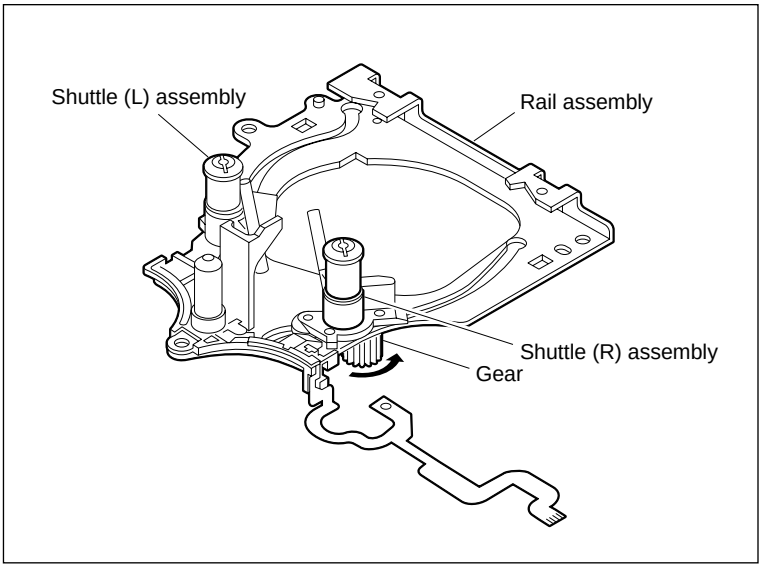

(3) Remove the three screws and remove the rail assembly.

**Note**

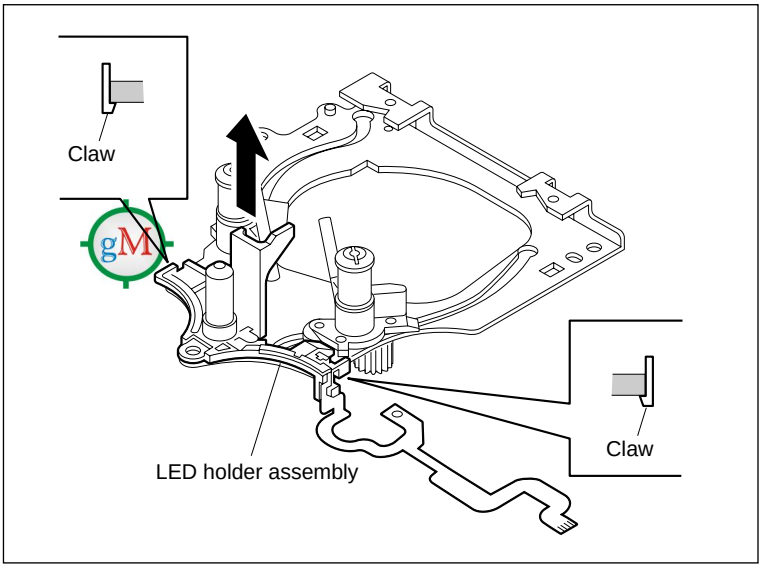
Use extreme care not to scratch the drum and the tape guide when removing. Also great care should be taken; not to fold and not to scratch the flexible card wire of the LED holder assembly when disconnecting.



(4) Bring both shuttle (R) and shuttle (L) assemblies to the threading position shown in the figure, by turning the gear on the back side of the rail assembly by a finger




(5) Unlock each two claws located on the left, right and middle side of the LED holder assembly with tweezers, and remove the LED holder assembly from the rail assembly.

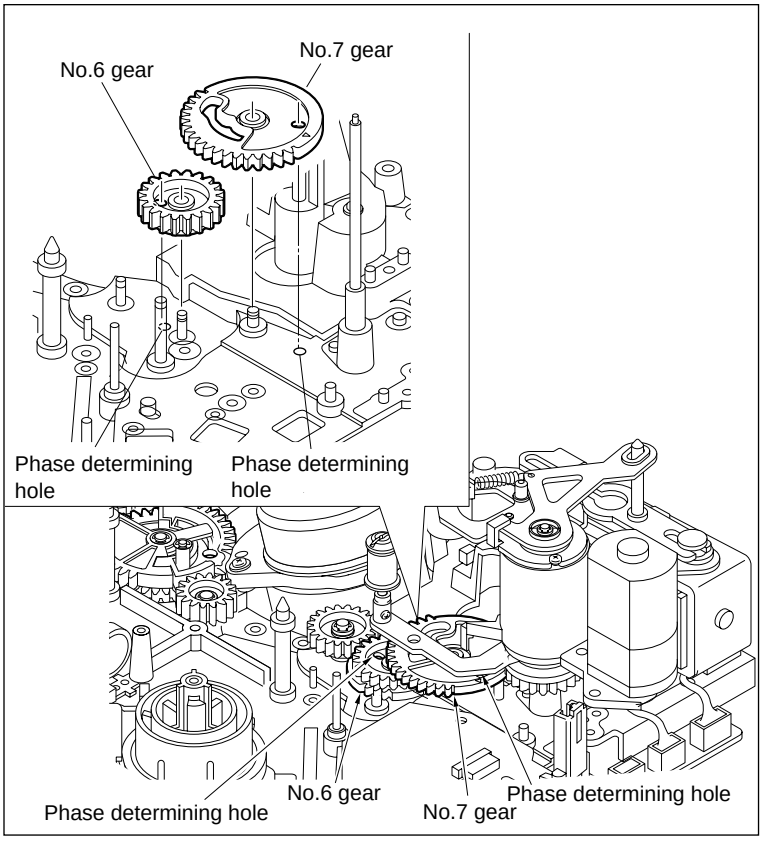


### 7. Reattaching the rail assembly

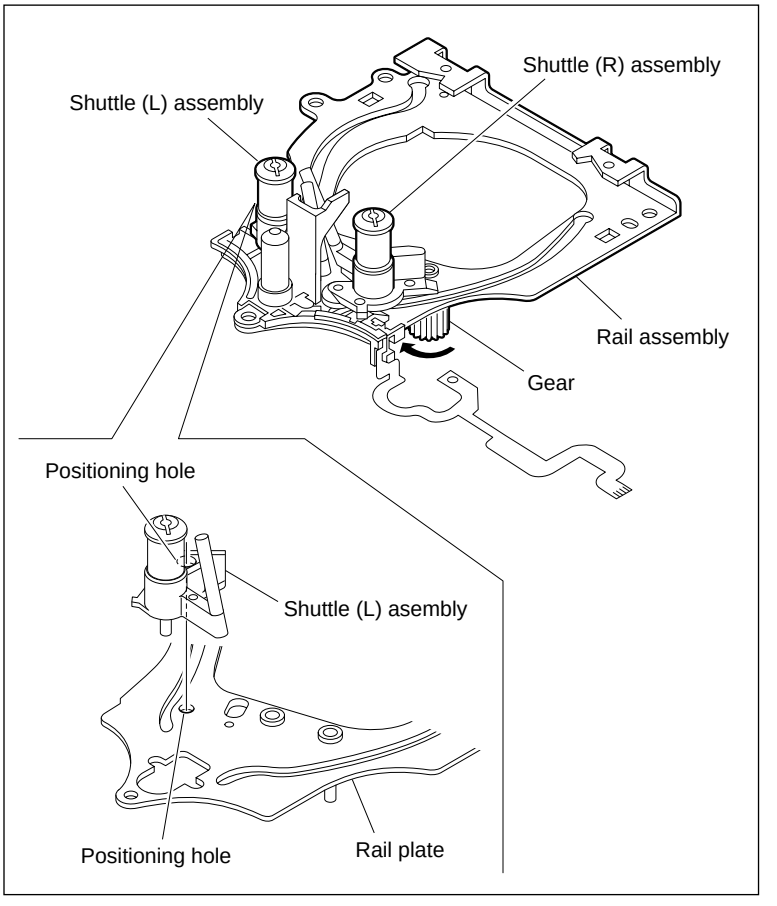
(1) Reattach a new rail assembly to the LED holder assembly.

(2) Ensure that the two phase determining holes in the mode gear assembly and in No.3 gear, which are already aligned in step 7- (2), are respectively aligned with the two holes in the MD chassis underneath each gear.

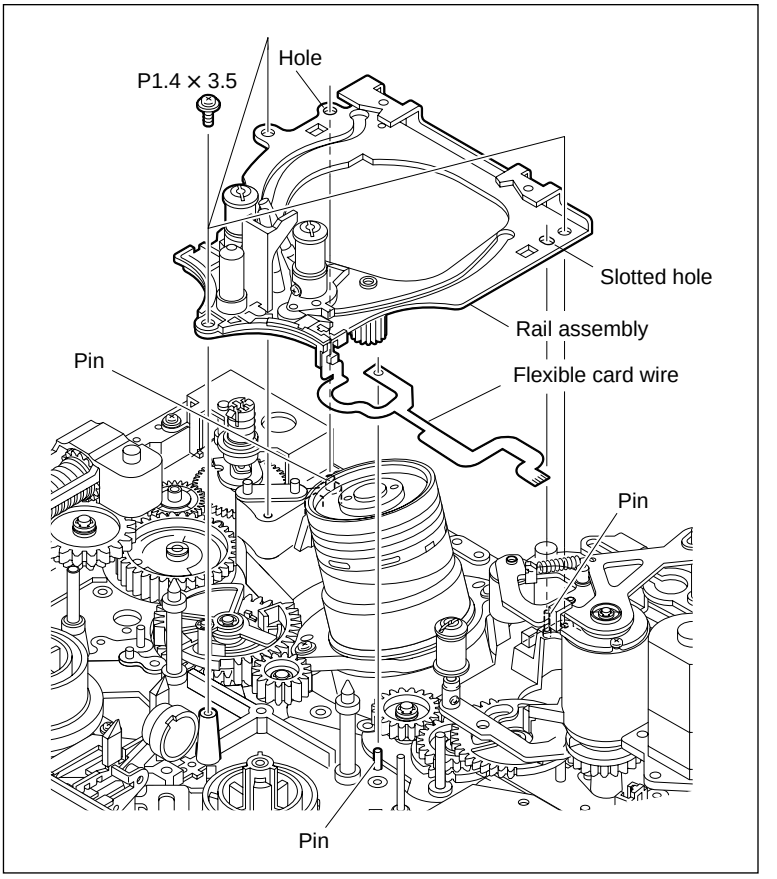
(3) Adjust the two phases determining holes in No.6 and No.7 gears to align respectively with the two holes in the MD chassis underneath each gear by turning No.7 gear by a finger.




(4) Turn the gear on the back side of the rail assembly until the shuttle (R) and shuttle (L) assemblies push the LED holder assembly as far as it will go, and align the positioning hole of the shuttle (L) assembly with the positioning hole of the rail assembly.



(5) Keeping the state in step (4) and further more holding the gear phase between S side and T side, fit the hole and slotted hole in the rail assembly on the two pins on the MD chassis respectively.
(6) Fit the hole in the flexible card wire of LED holder assembly on the pin on the MD chassis.
(7) Fix the rail assembly with the three screws. Tightening Torque : 0.1 N•m {1 kgf•cm}
(8) Reconnect the flexible card wire to the connector (CN2) on the SE-522 board.




### 8. Reattaching the head cleaner

Reattach the head cleaner. (Refer to Section 7-21.)

### 9. Reattaching the RMP retainer (T1) assembly

Fit the hole and slotted hole in the RMP retainer (T1) assembly on the pins on the MD chassis respectively, then fix it with the two screws.

### 10. Reattaching the T drawer arm assembly

Reattach the T drawer arm assembly.
(Refer to Section 7-12.)

### 11. Reattaching the S tension regulator assembly

Reattach the S tension regulator assembly.
(Refer to Section 7-11.)

### 12. Checking the threading/unthreading performance

Check the threading/unthreading is performed smoothly by turning the manual eject cover.

### 13. Cleaning the tape guide

Wipe the tape guides placed in followings with a cleaning cloth moistened with cleaning fluid.

- T drawer arm assembly
- S tension regulator assembly
- Shuttle (R) assembly
- Shuttle (L) assembly

## Adjustment after replacement

### 14. TENSION adjustment

(Refer to Section 5-3-3.)

### 15. Tape path adjustment

(Refer to Section 8-2.)

# 7-16. Capstan Motor Replacement

## Outline

### Replacement

Removing the frame assembly, MD
Removing the DR-428
Replacing the capstan motor
Reattaching the DR-428
Reattaching the frame assembly, MD
Cleaning the capstan shaft

### Adjustment after replacement

CAPSTAN ONLY adjustment
Checking the tape path adjustment

## Preparation

1. Set the unit in to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01

## Replacement

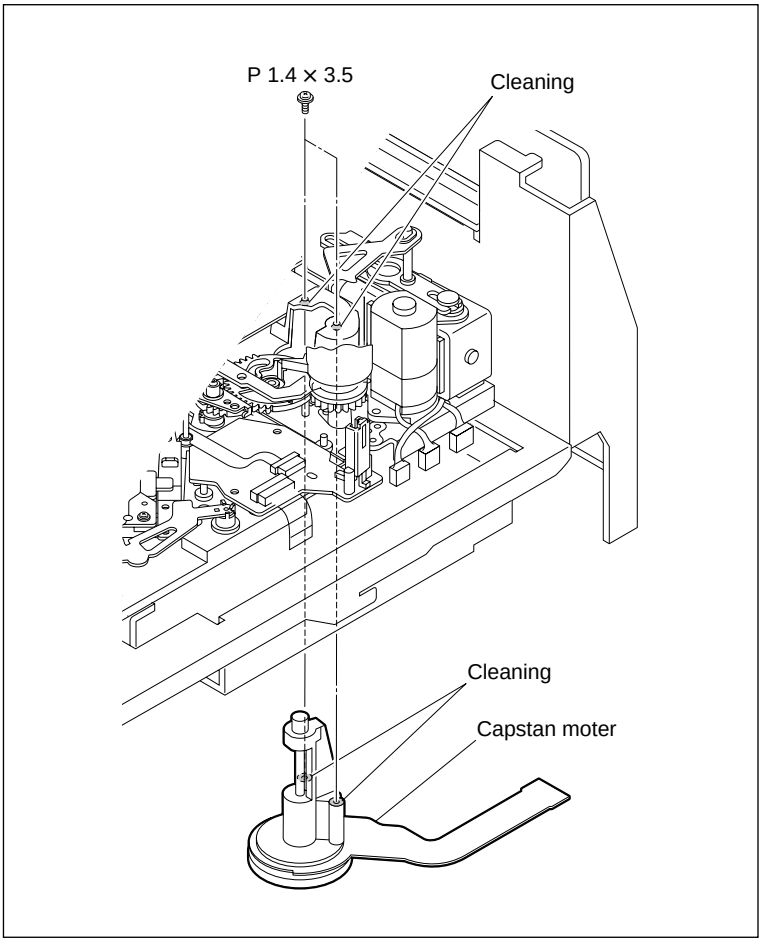
### 1. Removing the frame assembly, MD
Remove the frame assembly, MD.
(Refer to Section 7-2 Step 1.)

### 2. Removing the DR-428 board
Remove the DR-428 board.
(Refer to Section 3-5-3.)

### 3. Replacing the capstan motor
(1) While supporting the capstan motor by hand from the back side of the MD chassis, remove the two screws in the upper side of the chassis to remove the capstan motor.
(2) Wipe the mounting surfaces of a new capstan motor and the MD chassis with a cleaning cloth moistened with cleaning fluid.
(3) Insert the new capstan motor into the hole in the MD chassis positioning as shown in the figure and fix it with the two screws.
Tightening torque : 0.1 N•m {1 kgf•cm}

**Note**

Use care not to scratch the capstan motor pivot when inserting the capstan motor.




### 4. Reattaching the DR-428 board
Reattach the DR-428 board.
(Refer to Section 3-5-3.)

### 5. Reattaching the frame assembly, MD
Reattach the frame assembly, MD.
(Refer to Section 7-2 Step 7.)

### 6. Cleaning the Capstan shaft
Wipe the capstan shaft with a cleaning cloth moistened with cleaning fluid.

## Adjustment after replacement

### 7. CAPSTAN ONLY adjustment
(Refer to Section 5-3-3.)

### 8. Checking the tape path adjustment
(Refer to Section 8-4.)

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# 7-17. Loading Motor Replacement

## Outline

### Replacement

Disconnecting the connector
Replacing the loading motor assembly
Reconnecting the connector

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Tweezers

## Replacement

### 1. Disconnecting the connector

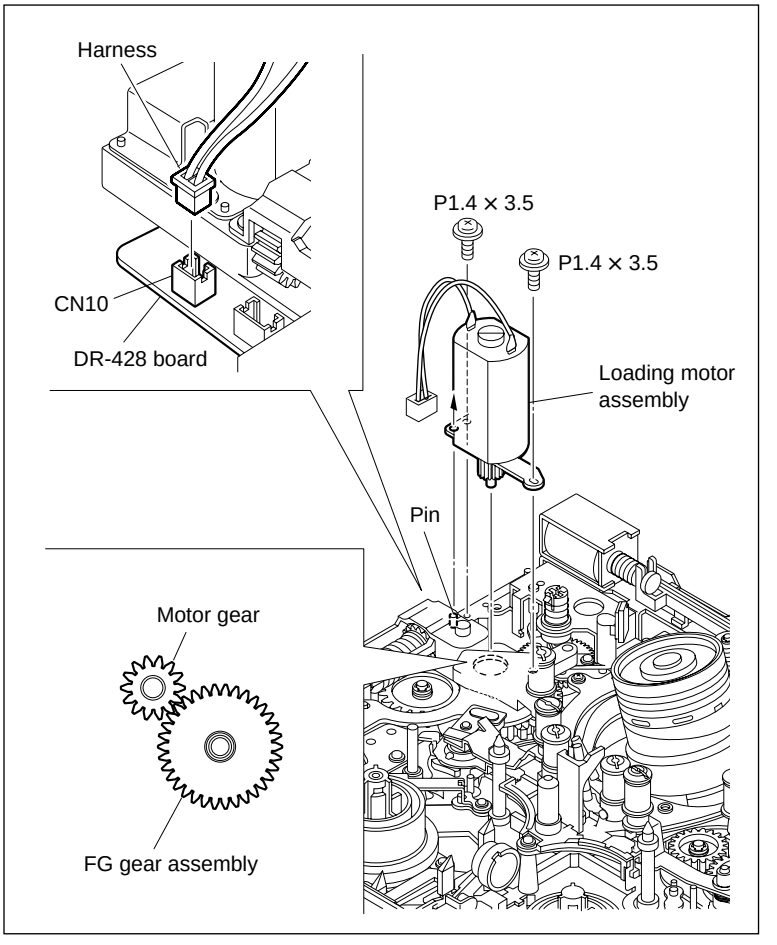
Disconnect the harness from the connector (CN10) on the DR-428 board with tweezers.

### 2. Replacing the loading motor assembly

(1) Remove the two screws to remove the loading motor assembly.
(2) Align a positioning hole in a new loading motor with the positioning pin on the MD chassis and engage the motor gear with the FG gear.
(3) Fix the loading motor assembly with the two screws.
Tightening Torque : 0.1 N•m {1 kgf•cm}

### 3. Reconnecting the connector

Reconnect the harness to the connector (CN10) on the DR-428 board with tweezers.



# 7-18. Reel Shift Motor Assembly Replacement

## Outline

### Replacement

Removing the pinch limiter assembly
Removing the pinch solenoid assembly
Replacing the reel shift motor assembly
Reattaching the pinch solenoid assembly
Reattaching the pinch limiter assembly

## Note

Prepare a new stop washer when replacing the reel shift motor assembly.
Stop washer (1.5) : 3-669-465-01 × 1 (for mounting the pinch limiter assembly)

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3)
4. Remove the cassette compartment. (Refer to Section 3-4)

## Tools

- Torque screwdriver’s bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Tweezers

## Replacement

### 1. Removing the pinch limiter assembly

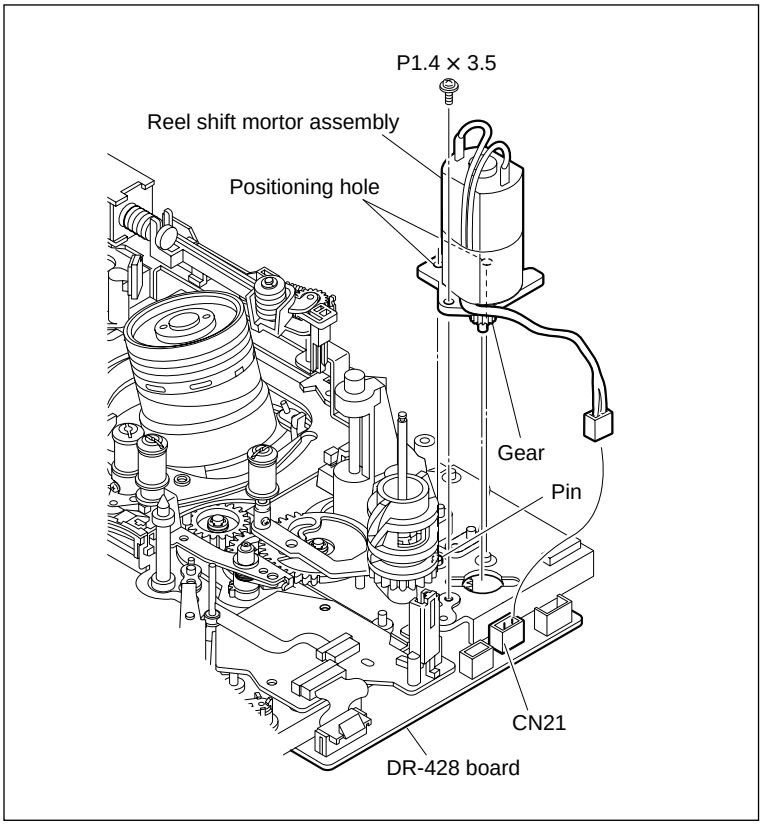
Remove the pinch limiter assembly.
(Refer to Section 7-5.)

### 2. Removing the pinch solenoid assembly

Remove the pinch solenoid assembly.
(Refer to Section 7-7.)

### 3. Replacing the reel shift motor assembly

(1) Disconnect the harness of the reel shift motor assembly from the connector (CN21) on the DR-428 board with tweezers.
(2) Remove the screw to remove the reel shift motor assembly.
(3) Fit two holes in a new reel shift motor assembly shown in the figure on the two pins on the MD chassis and engage it with the gear A.
(4) Reattach the reel shift motor assembly with the screw.
Tightening Torque : 0.1 N•m {1 kgf•cm}
(5) Reconnect the harness of the reel shift motor to the connector (CN21) on the DR-428 board.




### 4. Reattaching the pinch solenoid assembly

Reattach the pinch solenoid assembly.
(Refer to Section 7-7.)

### 5. Reattaching the pinch limiter assembly

Reattach the pinch limiter assembly.
(Refer to Section 7-5.)

# 7-19. MIC Assembly Replacement

## Outline

### Replacement

Removing the frame assembly, MD
Disconnecting the flexible card wire
Moving the S/T reel tables
Removing the L push plate
Removing the MIC spring
Replacing the MIC assembly
Moving the S/T reel tables
Reattaching the MIC spring
Reattaching the L push plate
Reconnecting the flexible card wire
Reattaching the frame assembly, MD

## Note

Prepare a new stop washer when replacing the MIC holder.
Stop washer (1.2) : 3-559-408-11
Do avoid touching the terminal on the MIC holder and wiping it with cleaning fluid. When need cleaning, wipe it carefully with a soft dry cloth.
Use care not to lose a poly-slider washer between the base plate and the MIC assembly.

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Tweezers

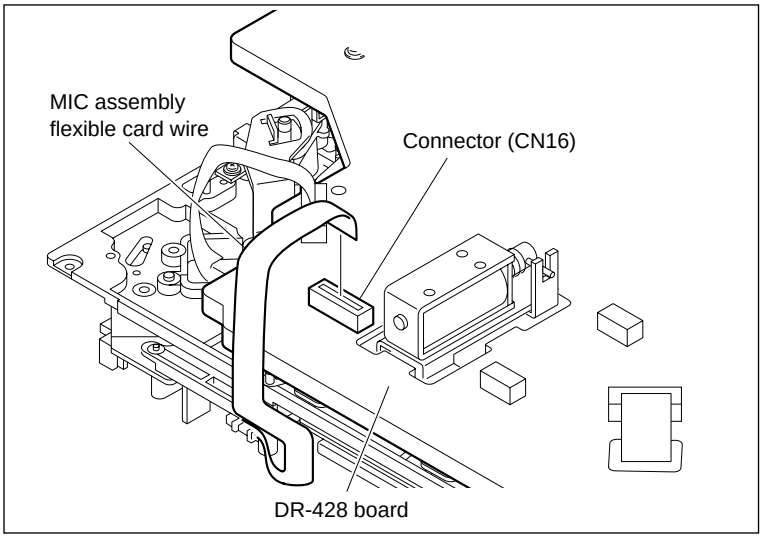
## Replacement

### 1. Removing the frame assembly, MD

Remove the frame assembly, MD.
(Refer to Section 7-2 Step 1.)

### 2. Disconnecting the flexible card wire

Disconnect the flexible card wire from the connector (CN16) on the DR-428 board located on the back side of the MD chassis.

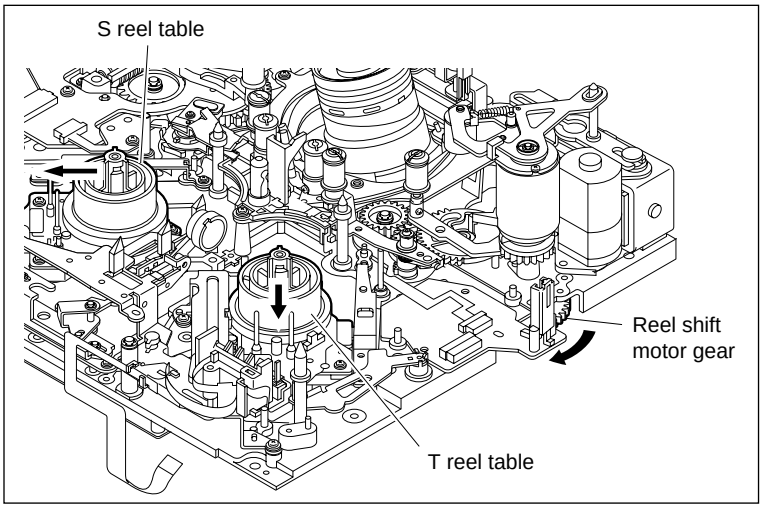



### 3. Moving the S/T reel tables

Turn the reel shift motor gear in the arrow direction by the bamboo skewer and bring the S/T reel tables to the standard cassette position (the most front side).

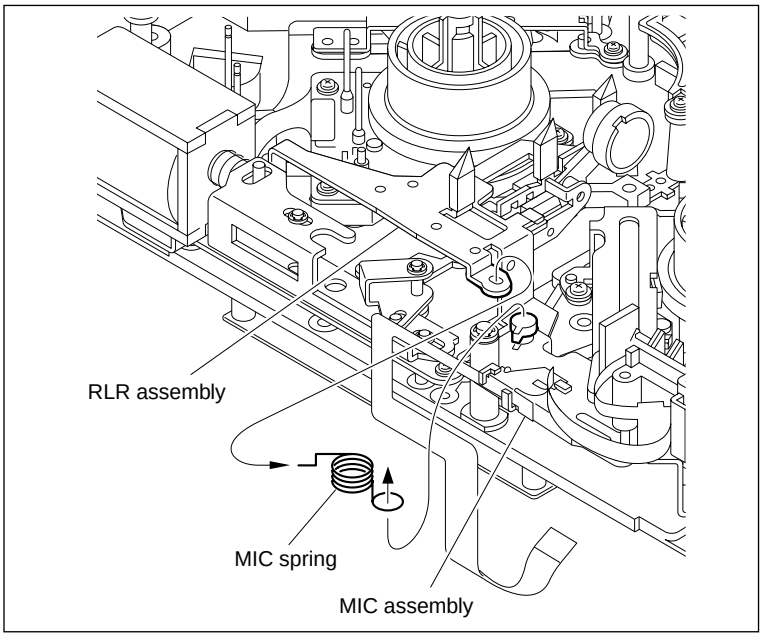
### 4. Removing the L push plate

Remove the L push plate. (Refer to Section 7-3.)




### 5. Removing the MIC spring

Unhook the hooks on the both ends of the MIC spring which hold the MIC arm and the RLR assemblies.



## 6. Replacing the MIC assembly

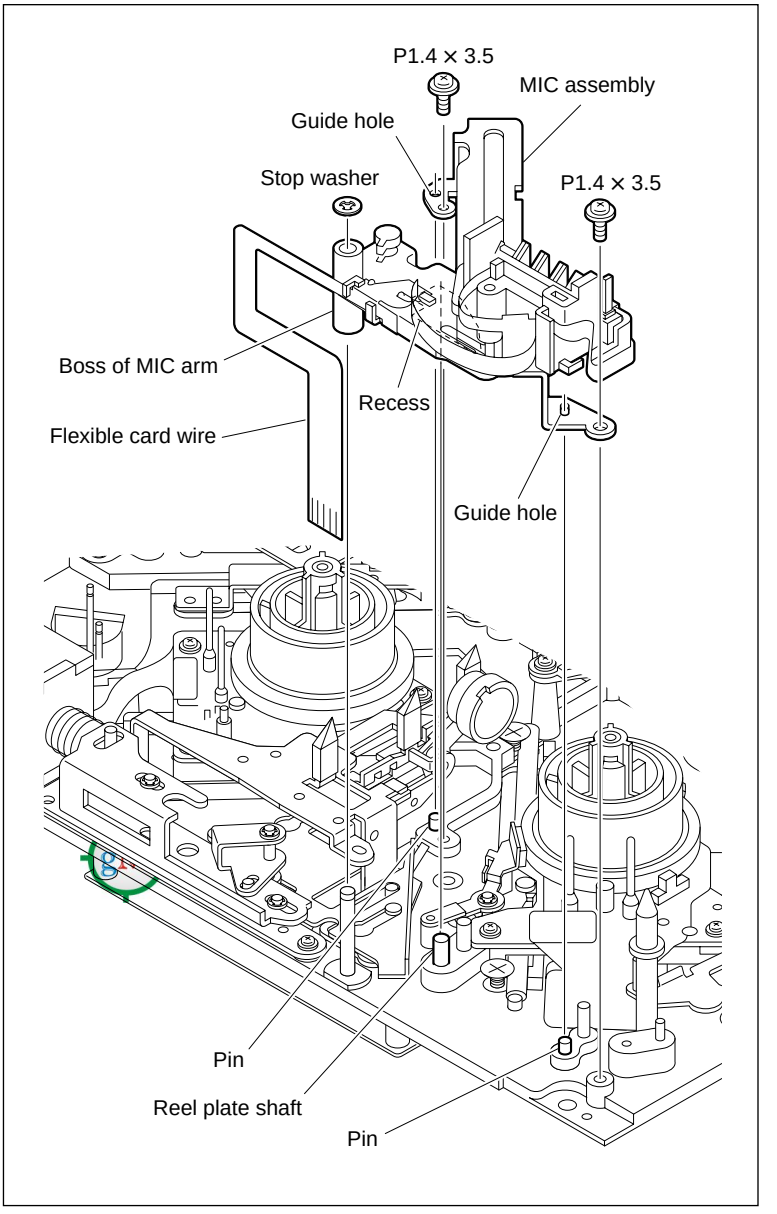
(1) Remove the stop washer and the two screws which secure the MIC assembly to the MD chassis, and remove the MIC assembly.

(2) Insert a tip of the flexible card wire of a new MIC assembly between the chassis and the front MD chassis to bring it to the back side of the unit.

**Note**

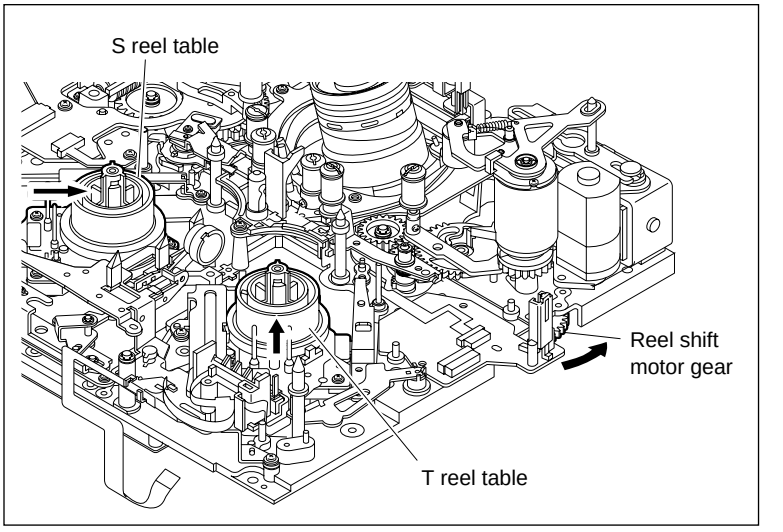
Use great care not to fold and scratch the flexible card wire during this operation.

(3) Fit the boss of the MIC arm on the shaft of the MD chassis and also fit the recess on the reel plate shaft.
Fit the two guide holes in the MIC assembly on the pins on the MD chassis, and fix the assembly with the two screws and a new stop washer.
Tightening Torque : 0.1 N•m {1 kgf•cm}



### 7. Moving the S/T reel tables

Turn the reel shift motor gear in the arrow direction by the bamboo skewer and bring the S/T reel tables to the S-cassette position (the drum side).
Confirm that the S/T reel tables and the MIC assembly shift smoothly.




### 8. Reattaching the MIC spring

Reattach the MIC spring removed in step 5 to the MIC arm and RLR assemblies.

### 9. Reattaching the L push plate

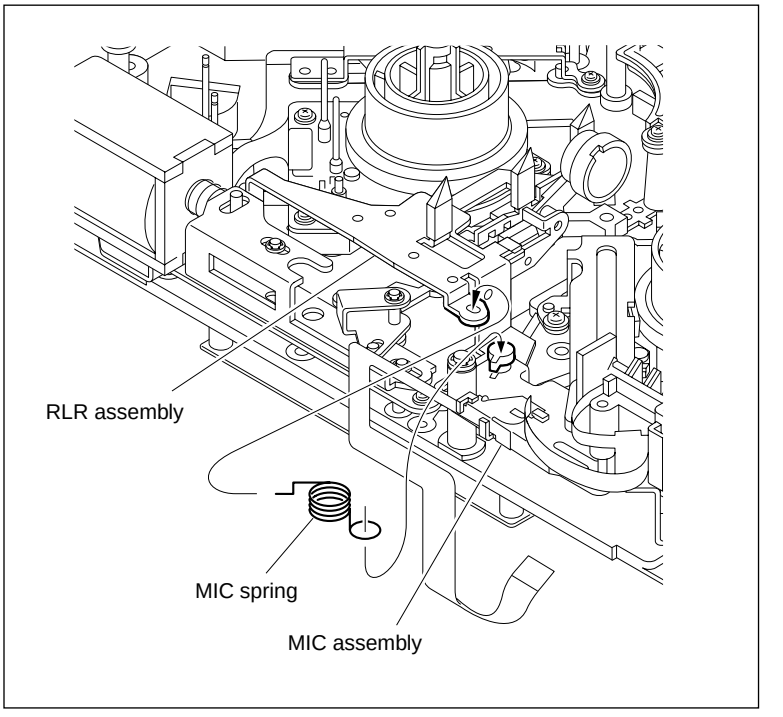
Reattach the L push plate. (Refer to Section 7-3.)

### 10. Reconnecting the flexible card wire

Reconnect the flexible card wire to the connector (CN16) on the DR-428 board located on the back side of the MD chassis.

### 11. Reattaching the frame assembly, MD

Reattach the frame assembly, MD.
(Refer to Section 7-2 Step 7.)



# 7-20. MIC Holder Assembly Replacement

## Outline

### Replacement

Removing the frame assembly, MD
Removing the MIC assembly
Replacing the MIC holder assembly
Reattaching the MIC assembly
Reattaching the frame assembly, MD

## Note

Prepare new stop washers when replacing the MIC holder.
Stop washer (1.2) : 3-559-408-11 × 2 (for mounting the MIC holder assembly)
Stop washer (1.5) : 3-669-465-01 × 1 (for mounting the MIC assembly)
Do avoid touching the terminal on the MIC holder and wiping it with cleaning fluid. When need cleaning, wipe it carefully with a soft dry cloth.
Use care not to lose a poly-slider washer between the base plate and the MIC assembly.

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.5 : J-6082-231-A
- Washer mounting fixture Ø1.2 : J-6082-232-A
- Tweezers

## Replacement

### 1. Removing the frame assembly, MD

Remove the frame assembly, MD.
(Refer to Section 7-2 Step 1.)

### 2. Removing the MIC assembly

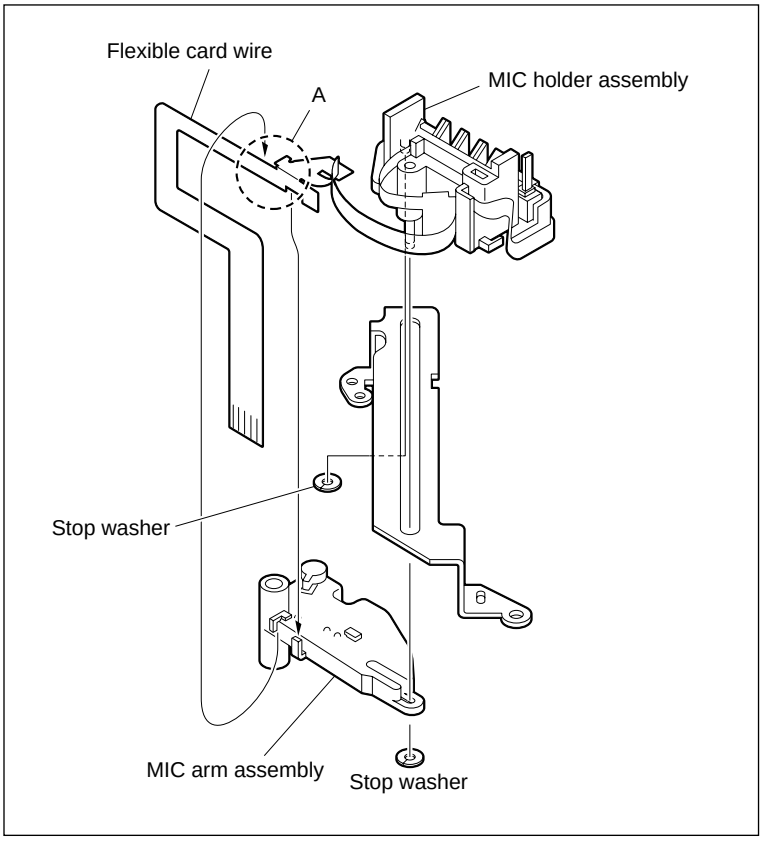
Remove the MIC assembly.
(Refer to Section 7-19.)

### 3. Replacing the MIC holder subassembly

(1) Remove the portion A shown of the flexible card wire from the MIC arm assembly as shown in the figure.
(2) Remove the two stop washers from the back side of the MIC assembly and remove the MIC holder assembly.
(3) Fix a new MIC holder assembly to the MIC assembly with two new stop washers (1.2).

**Note**

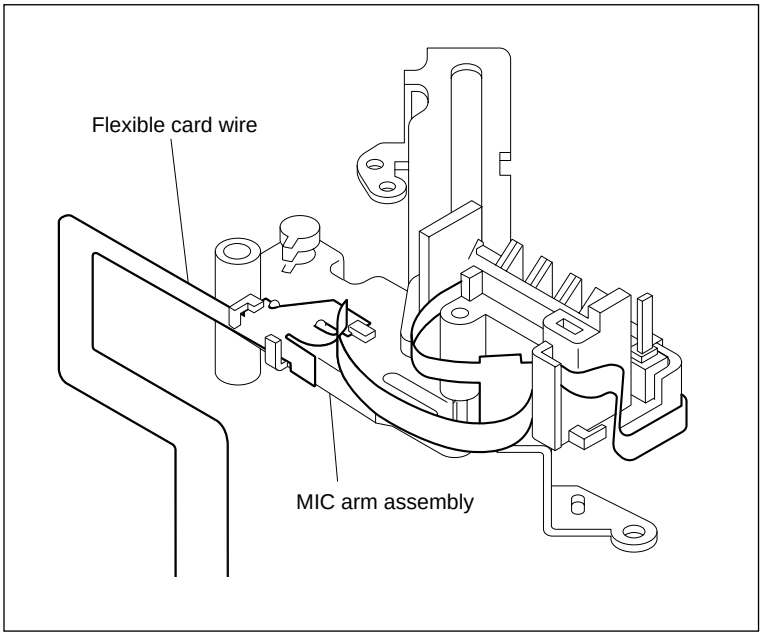
Use great care not to fold and not to scratch the flexible card wire when reattaching.




(4) Fix the flexible card wire to the MIC arm assembly as shown in the figure.
(5) Insert a tip of the flexible card wire of the MIC assembly between the chassis and the front MD chassis to bring it to the back side of the unit.

**Note**

Use extreme care not to fold and not to scratch the flexible card wire at this operation.




### 4. Reattaching the MIC assembly

Reattach the MIC assembly.
(Refer to Section 7-19.)

### 5. Reattaching the frame assembly, MD

Reattach the frame assembly, MD.
(Refer to Section 7-2 Step 7.)

# 7-21. HC Roller Assembly Replacement

## Outline

### Replacement

Disconnecting the connector
Removing the head cleaner assembly
Replacing the HC roller assembly
Reattaching the head cleaner assembly
Reconnecting the connector

## Note

Prepare a new stop washer when replacing the HC roller assembly.
Stop washer (0.8) : 3-315-414-31 × 1
Bare-handed touch to the HC roller assembly is prohibited. Do put on cloth gloves before replacing.

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Washer extracting fixture (A) : J-6082-234-A
- Washer mounting fixture Ø1.8 : J-6082-233-A

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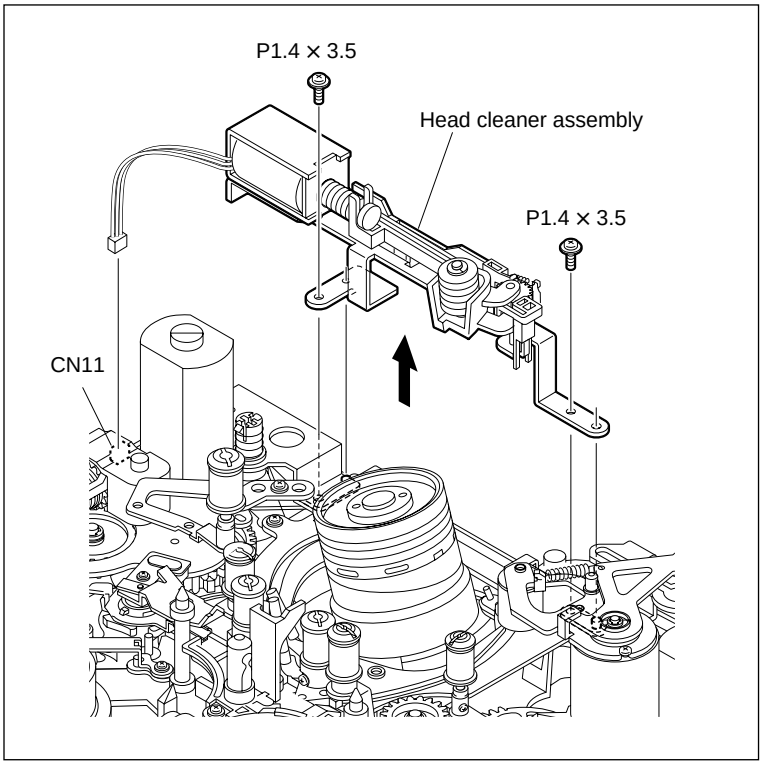
## Replacement

### 1. Disconnecting the connector

Disconnect the harness from the connector (CN11) on the DR-428 board with tweezers.

### 2. Removing the head cleaner assembly

Remove the two screws and pull off the head cleaner assembly in the arrow direction.




### 3. Replacing the HC roller assembly

(1) Remove the stop washer to remove the HC roller assembly.

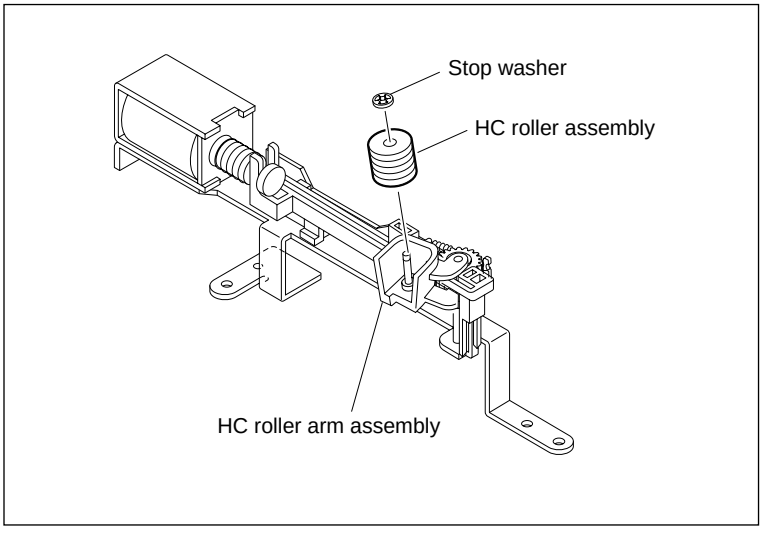
(2) Attach a new HC roller assembly with a new stop washer.

**Note**

Avoid bare-handed touch to the HC roller assembly.

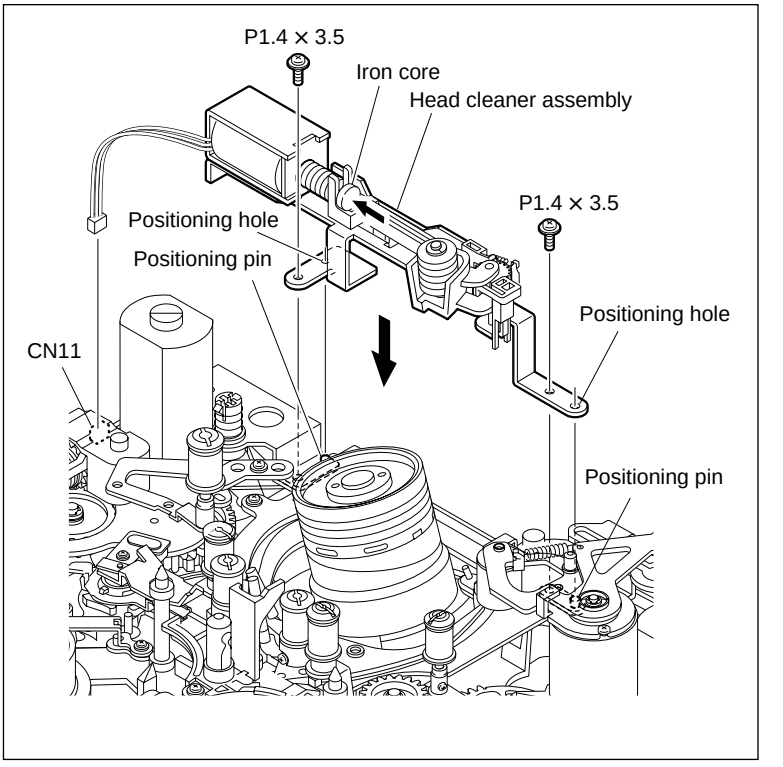
In addition, do not give an excessive force to it at removal and reattachment, it may cause deformation.

Operation supporting the back side of the HC roller assembly by fingers is required.



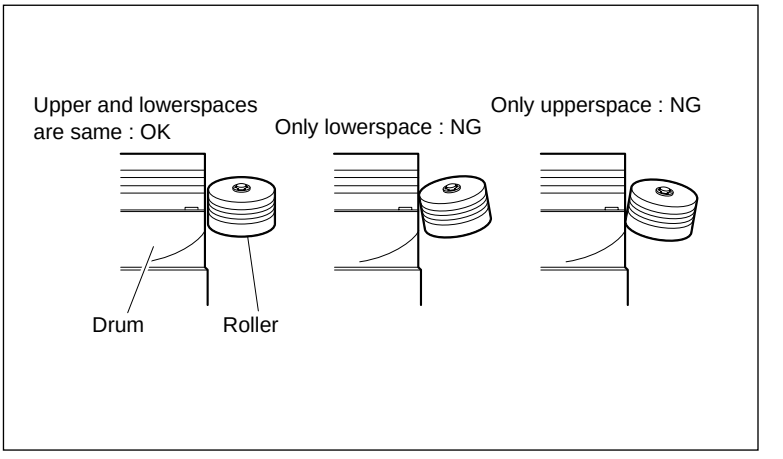
### 4. Reattaching the head cleaner assembly

Align the two positioning holes in the head cleaner assembly with the two positioning pins on the MD chassis and fix the assembly with the two screws.
Tightening torque : 0.1 N•m {1 kgf•cm}




### 5. Checking the performance of the head cleaner assembly

Check that the HC roller assembly contacts the drum assembly in parallel when the solenoid's iron core of the head cleaner assembly is in the pull-in state by being pressed in the arrow direction.




### 6. Reconnecting the connector

Reconnect the harness to the connector (CN11) on the DR-428 board.

# 7-22. Head Cleaner Solenoid Replacement

## Outline

### Replacement

Removing the head cleaner assembly
Replacing the head cleaner solenoid
Reattaching the head cleaner assembly
Checking the performance of the head cleaner assembly

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

## Tools

- Torque screwdriver's bit (for M1.4) : J-6325-110-A
- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A

## Replacement

### 1. Removing the head cleaner assembly

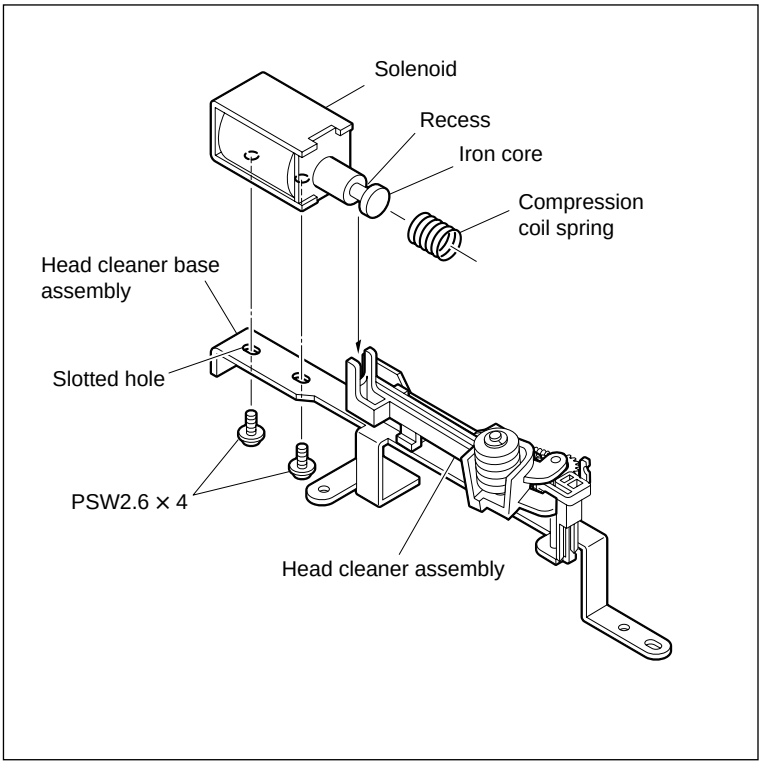
Remove the head cleaner assembly.
(Refer to Section 7-21.)

### 2. Replacing the head cleaner solenoid

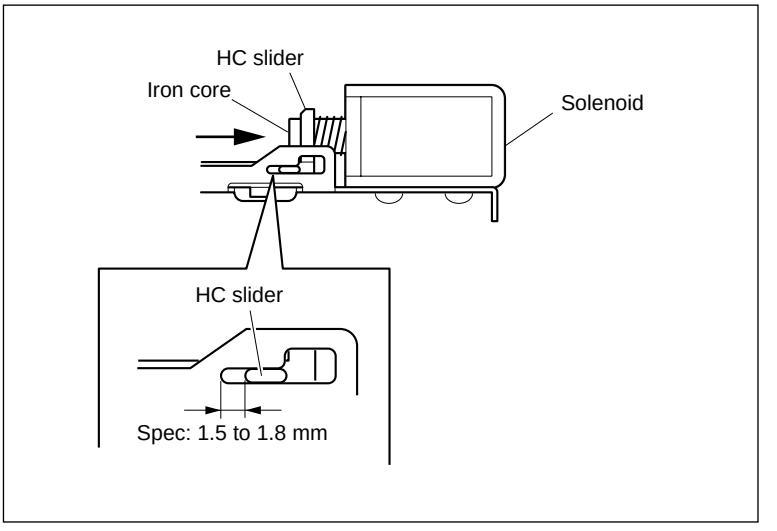
(1) Remove the two screws on the back side of the head cleaner assembly.
(2) Remove the solenoid with the spring on it.
(3) Remove the compression coil spring from the solenoid.
(4) Fit the compression coil spring on a new solenoid's iron core.
(5) Pull out the iron core until a recess comes in sight, then fix the solenoid to the head cleaner assembly.
(6) Align the two holes in the solenoid with the two slotted holes in the HC base assembly and fix temporally with the two screws.

**Note**

Tighten the screws just enough to move the head cleaner solenoid.




(7) Adjust the solenoid position to meet the specification of the clearance between the slit of head cleaner base and the tip of the HC slider under the condition that the iron core comes to the pull-in state by being pressed in the arrow direction, then tighten the two screws.
Tightening torque : 0.2 N•m {2 kgf•cm}




### 3. Reattaching the head cleaner assembly

Reattach the head cleaner assembly.
(Refer to Section 7-21.)

### 4. Checking the performance of the head cleaner assembly

Check the performance of the head cleaner assembly. (Refer to Section 7-21.)

# 7-23. Cassette Compartment Motor Replacement

## Outline

### Replacement

Removing the motor gear assembly
Replacing the motor assembly
Reattaching the motor gear assembly

## Preparation

1. Set the unit to the unthreading end status.
2. Power off the unit.
3. Remove the top panel. (Refer to Section 3-3.)
4. Remove the cassette compartment. (Refer to Section 3-4.)

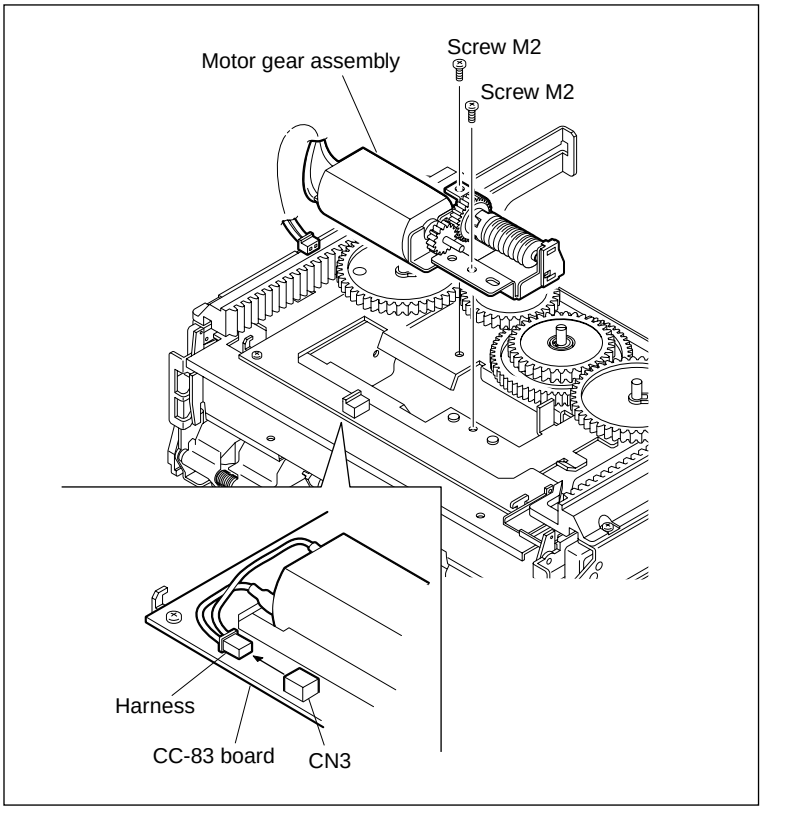
## Tools

- Torque screwdriver (for 3 kgf•cm) : J-6325-400-A
- Torque screwdriver's bit (for M2) : J-6325-380-A
- Grease (SGL-941) : 7-662-001-39
- Tweezers

## Replacement

### 1. Removing the motor gear assembly

(1) Remove the harness of the motor gear from the connector (CN3) on the CC-83 board in the cassette compartment.
(2) Remove the motor gear assembly from the cassette compartment by removing the two screws.



## 2. Replacing the motor assembly

(1) Release the upper and lower claws of the pivot bracket to remove the pivot bracket.

**Note**

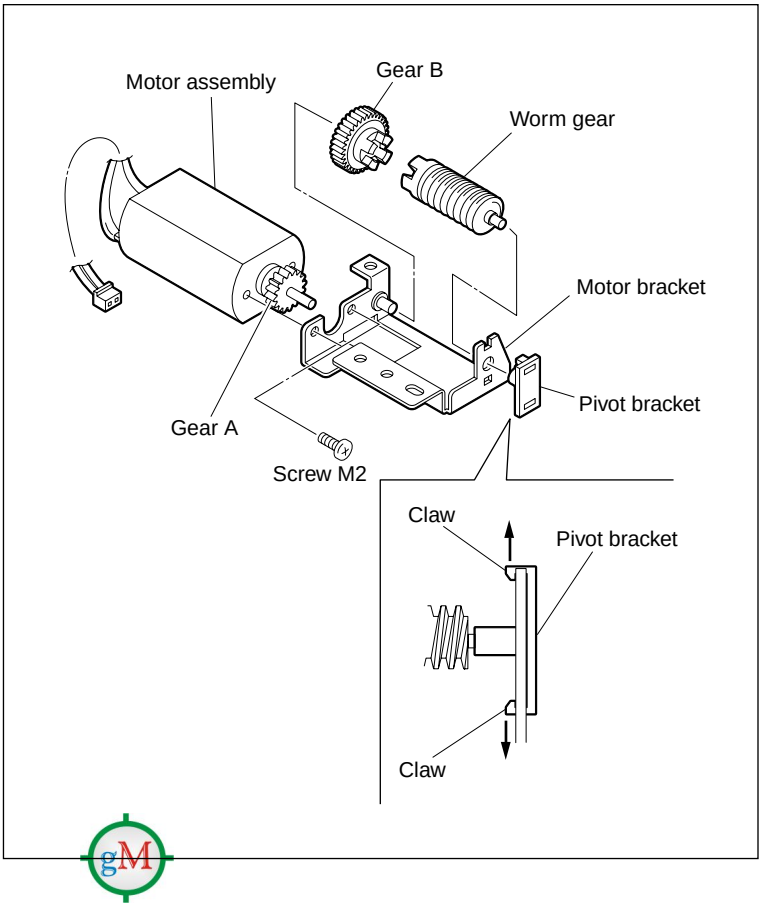
Be careful not to lose the worm gear, which also comes off at this operation.

(2) Remove the gear B from the shaft of the motor bracket assembly.
(3) Remove the two screws to remove the motor assembly from the motor bracket.
(4) Fix a new motor assembly to the motor bracket positioning as shown in the figure with the two screws.

**Note**

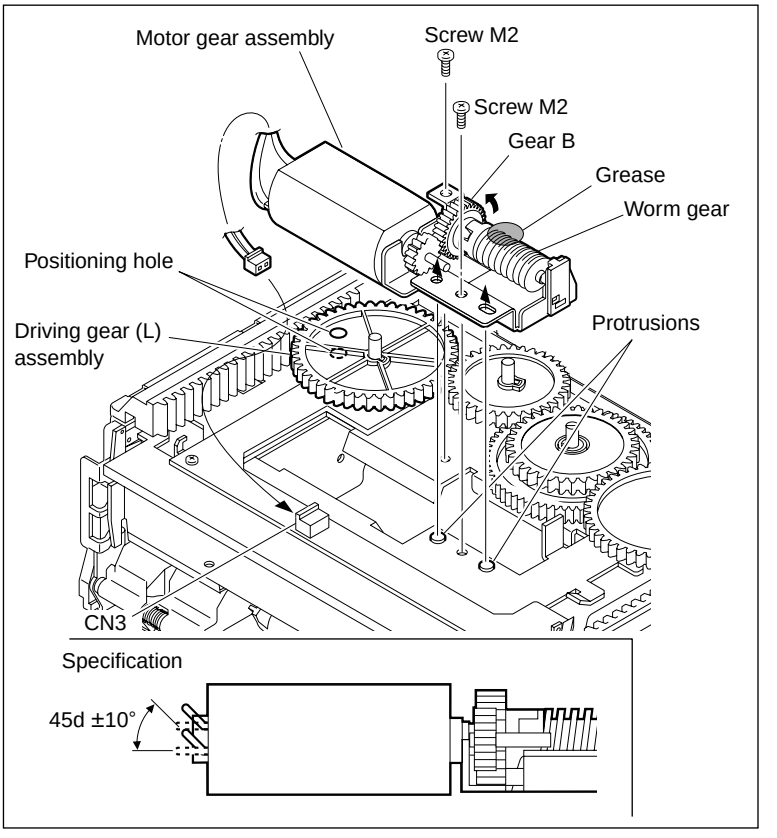
Be reminded a new motor assembly has the gear A on its shaft.
Tightening torque : 0.2 N•m {2 kgf•cm}

(5) Reattach the gear B to the shaft of the motor bracket assembly.
(6) Make a coupling between the worm gear and the gear B and insert the pivot bracket shaft from another side of the worm gear.
(7) Fix the upper and lower claws to the motor bracket.




## 3. Reattaching the motor gear assembly

(1) Bend the two terminals in the motor gear assembly to meet the specification of their bent angle shown in the figure.
(2) With the worm gear in the motor gear assembly engaged with the worm wheel, insert the two protrusions of the motor gear assembly into the holes in the cassette compartment and fix with two screws.
(3) Align the hole in the drive gear (L) assembly with the hole in the cassette compartment by turning the gear B of the motor gear assembly by a finger.
(4) Apply a grain of grease on the worm gear in the motor gear assembly.
(5) Reconnect the harness of the motor gear assembly to the connector (CN3) on the CC-83.



# 7-24. Switching Regulator Replacement

## Outline

### Replacement

Disconnecting the connectors
Replacing the switching regulator
Reconnecting the connectors

## Preparation

1. Power off the unit.
2. Remove the top panel. (Refer to Section 3-3.)

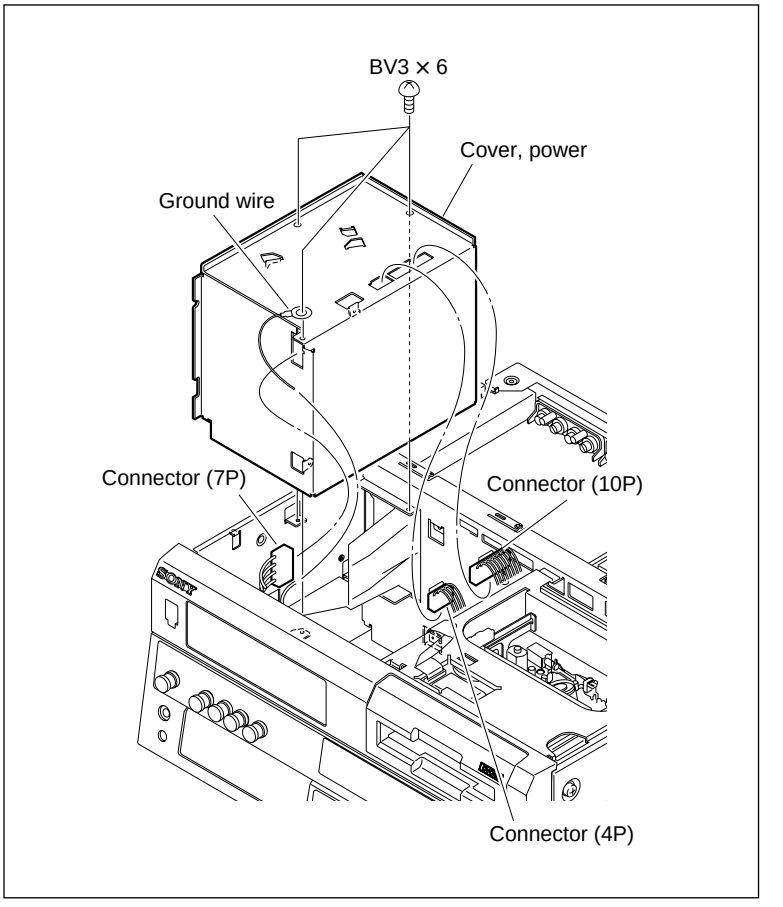
## Replacement

### 1. Disconnecting the connectors

Disconnect the two connectors (4P and 10P) on the upper side of the switching regulator.

### 2. Replacing the switching regulator

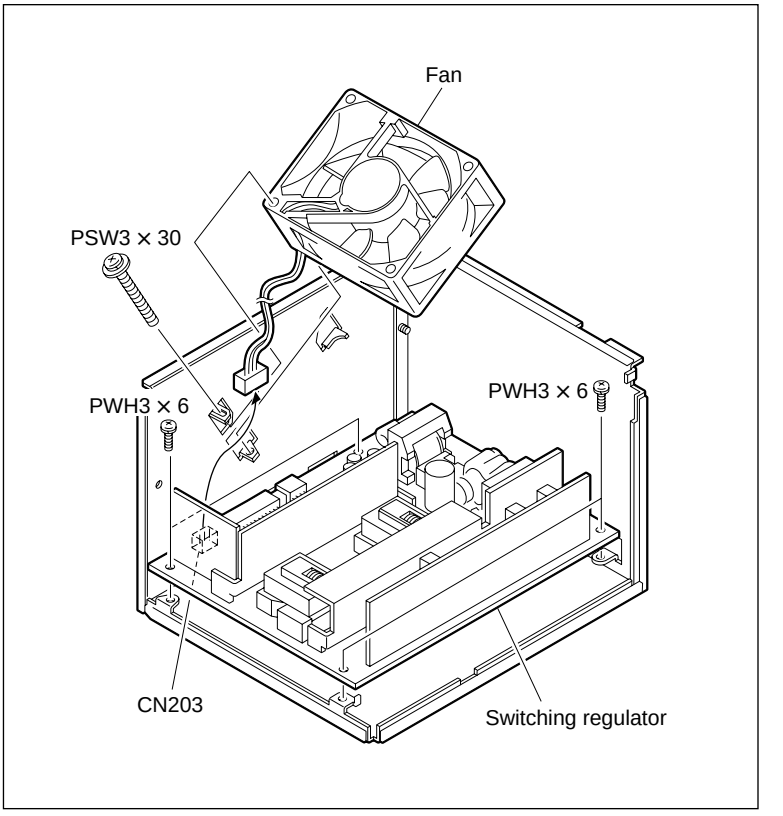
(1) Remove the three screws (BV3 × 6), and remove the cover, power. Also remove the harness connector connected to the side connector (7P).



(2) Remove the screw (PSW3 × 30), and remove the fan.
(3) Remove the four screws (PWH3 × 6), and remove the switching regulator.
(4) Remove the harness connector connected to the connector (CN203) of the switching regulator.
(5) Connect the harness connector to the connector (CN203) of a new switching regulator.
(6) Attach the switching regulator using the four screws (PWH3 × 6).
(7) Attach the fan using the screw (PSW3 × 30).
(8) Connect the harness connector to the side connector (7P), and attach the cover, power using the three screws.

**Note**

When attaching the cover, power using the screws, also tighten the ground wire.




### 3. Reconnecting the connectors

Reconnect the two connectors removed in step 1.

# Section 8
# Tape Path Alignment

Tape path adjustment is very important adjustment to run tape under the optimum conditions for tape.
If this adjustment is not performed correctly, tape may be damaged.
Perform this adjustment with utmost attention.
Perform this adjustment after the cassette compartment assembly is removed from VTR.

## 8-1. General Information for Tape Path Adjustment

### Tools

#### 1. Alignment tape

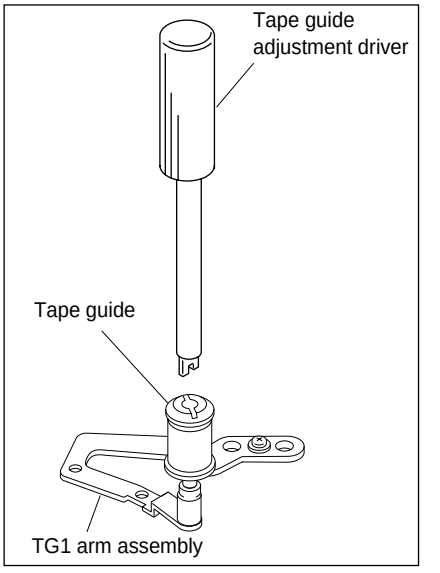
The following alignment tapes are necessary for tape path adjustment.

- XH2-1AST (Standard cassette) : 8-967-999-02
- XH5-1A2 (Mini cassette) : 8-967-999-22 (NTSC)
- XH5-1AP2 (Mini cassette) : 8-967-999-26 (PAL)

#### 2. Tape guide adjustment driver

The following tape guide adjustment driver which is available as the Sony service tool is necessary for height adjustment of tape guide.

- Tape guide adjustment driver : J-6082-362-A




#### 3. Tape path adjustment board

Use the tape path adjustment board (DJ-461) and path adjustment board connection cable (DJ-472) to parforme the tape path adjustment.

- Tape path adjustment board, DJ-461 : J-6444-610-B
- Path adjustment board connection cable, DJ-472 : J-6444-720-A

#### 4. The required tools in addition to the above listed tools.

- Oscilloscope (Tektronix 2445B or equivalent)
- Small mirror for adjustment : J-6080-029-A
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01

### Preparation of Tape Path Adjustment

#### 1. Cassette compartment assembly

It is not necessary to remove the cassette compartment assembly during tape path adjustment.

#### 2. Cleaning the tape running surface

Clean the tape running surface of tape guides, head drum and video heads using the cleaning cloth moistened with cleaning fluid.

- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01

### 3. Information to use the tracking alignment tape (XH2-1AST)

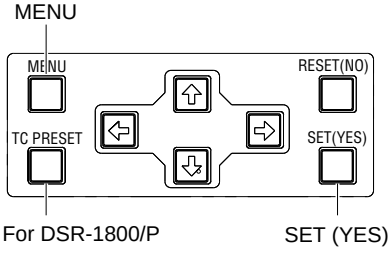
Check the following items before entering the tracking adjustment mode.

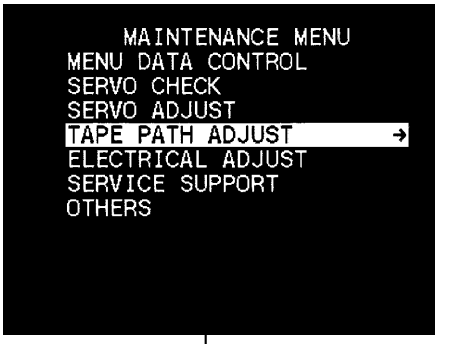
- How to enter the maintenance menu, refer to Section 5-2-2.
- How to exit the maintenance menu, refer to Section 5-2-3.

### 4. Operating procedures of tracking adjustment

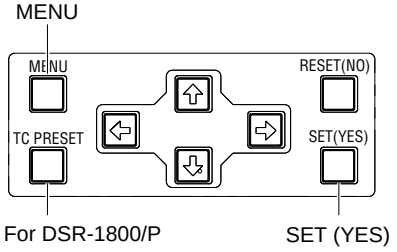
(1) Enter the maintenance menu.

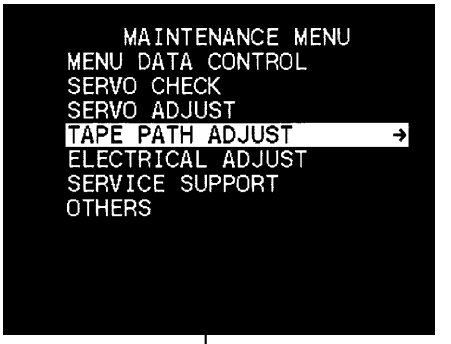
(2) Move the cursor to “TAPE PATH ADJUST” which is displayed with a white background using the [↑] or [↓] key.



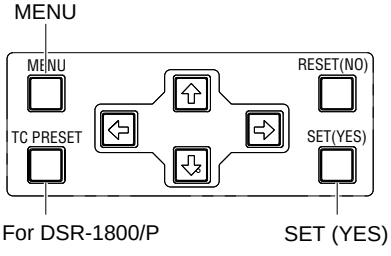




(3) Press the [→] key.
This selects “TAPE PATH ADJUST” and menu of the lower level directory appears.



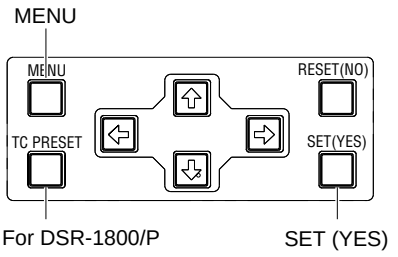

(4) Move the cursor to “TRACKING ADJUST” which is displayed with a white background using the [↑] , or [↓] key.

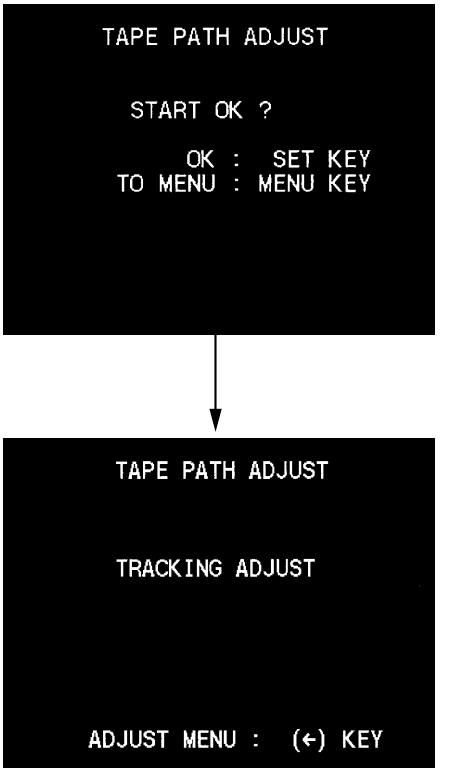


http://getMANUAL.com

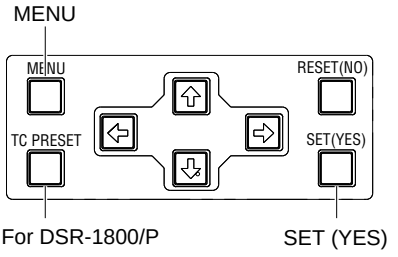


(5) Press the [→] key to show the “START OK?” display.




(6) Press the [SET (YES)] key.

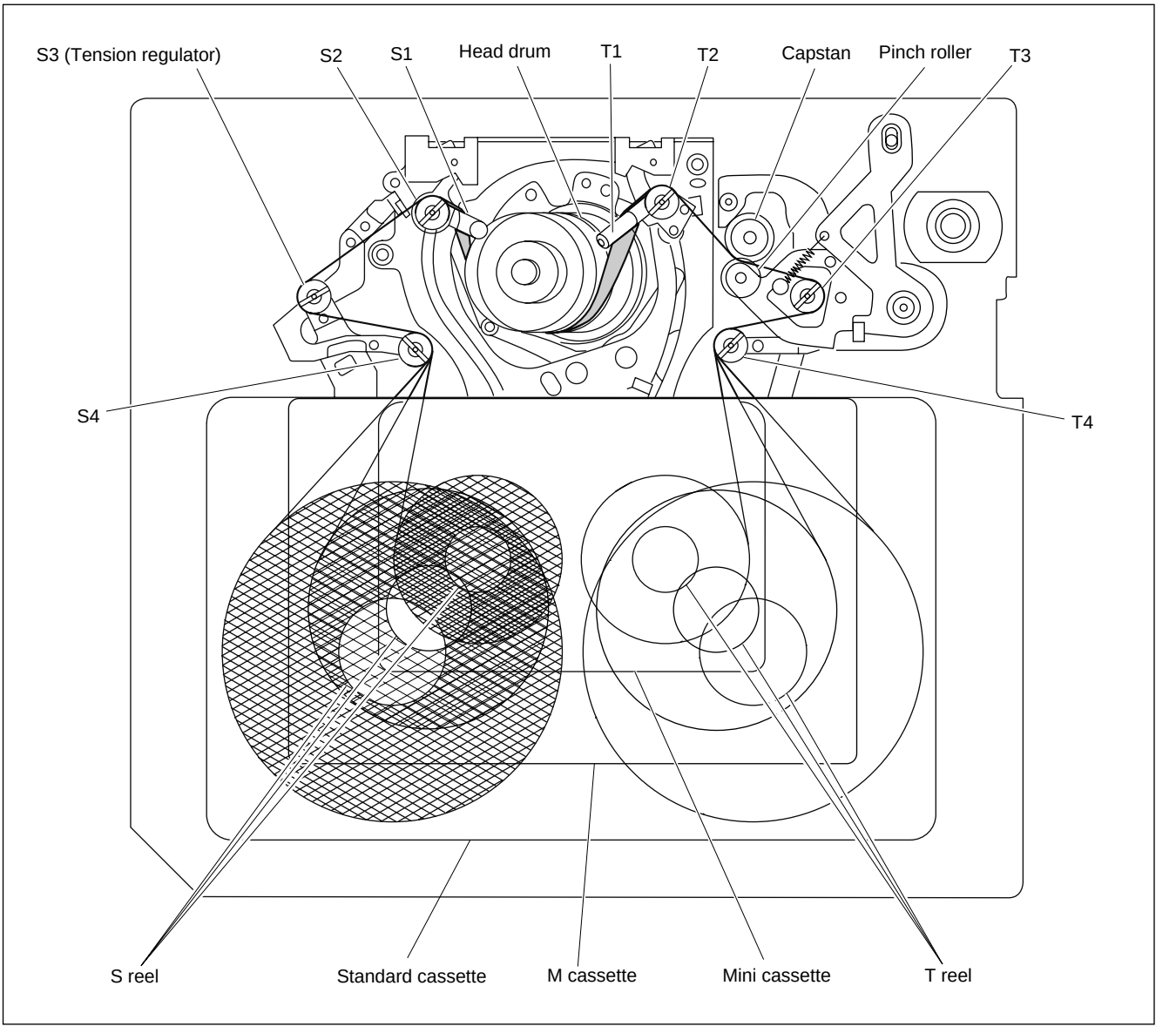



(7) Display the “TRACKING ADJUST” on the screen. The adjustments that are described in sections 8-2, 8-4 to 8-8 are performed under this mode.

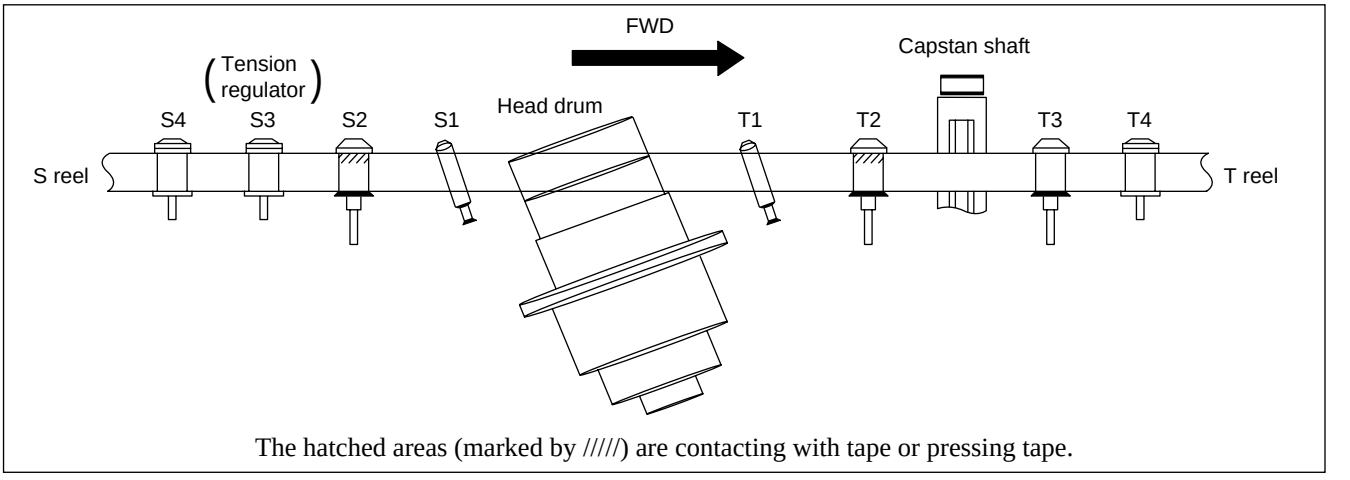
**Note**

This unit does not have the tracking shift function. Instead of having the tracking shift function, the tracking alignment tape XH2-1AST has already been recorded in the factory so that the servo is locked at 50 % off-track automatically.

## 5. Tape guide locations




## 6. Tape running condition

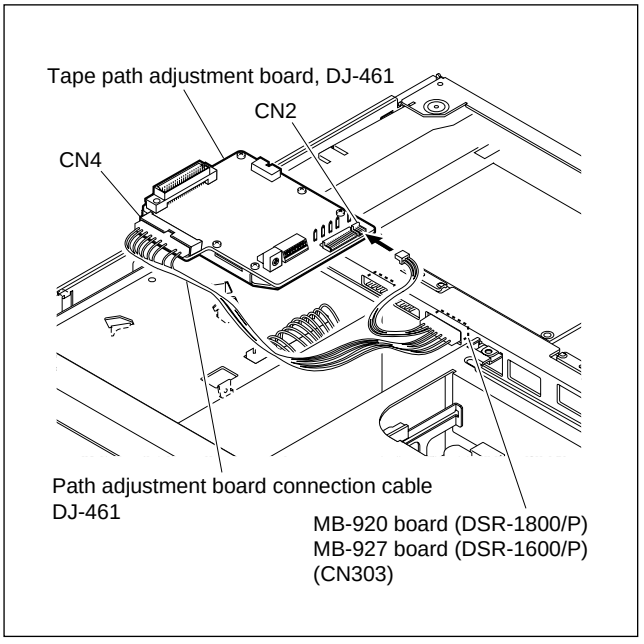



The hatched areas (marked by /////) are contacting with tape or pressing tape.

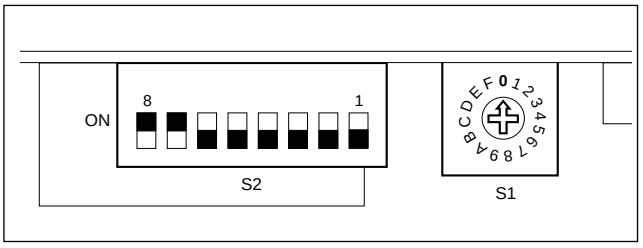
## 7. Preparation of signal measurement

Use the tape path adjustment board DJ-461 (J-6444-610-B) to perform the tape path adjustment.
And use the path adjustment board connection cable DJ-472 in stead of the harness supplied with the board.

(1) Setting of the tape path adjustment board
Connect the connector CN4 and CN2 on the tape path adjustment board with the connector CN303 on the MB-920 board (DSR-1800/P)/MB-927 board (DSR-1600/P) using the path adjustment board connection cable DJ-472.

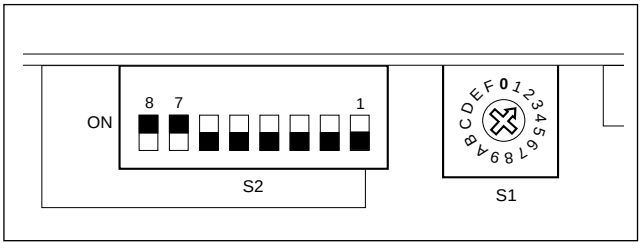



(2)-1 Switch setting of the tape path adjustment board (DSR-1800/P)




| SW | Bit | Setting | Function |
|---|---|---|---|
| S1 | — | 0 | Select the REC head. |
| S2 | 1 | OFF | |
| | 2 | OFF | |
| | 3 | OFF | |
| | 4 | OFF | |
| | 5 | OFF | |
| | 6 | OFF | |
| | 7 | ON | |
| | 8 | ON | Activate the switch setting of DJ-461 |

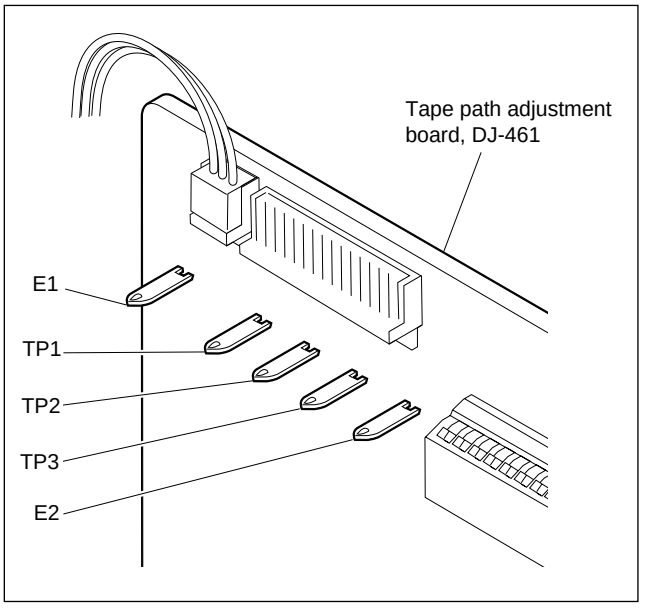
(2)-2 Switch setting of the tape path adjustment board (DSR-1600/P)




| SW | Bit | Setting | Function |
|---|---|---|---|
| S1 | — | 2 | Select the PB head. |
| S2 | 1 | OFF | |
| | 2 | OFF | |
| | 3 | OFF | |
| | 4 | OFF | |
| | 5 | OFF | |
| | 6 | OFF | |
| | 7 | ON | |
| | 8 | ON | Activate the switch setting of DJ-461 |

(3) Measuring points/signal for adjustment

| Signal name | Board | Measuring point |
|---|---|---|
| RF output (signal after envelope detection) | DJ-461 | TP2 |
| Switching pulse output | DJ-461 | TP3 |
| GND | DJ-461 | E1 |
| | DJ-461 | E2 |




**Preference**

DSR-1800/P

| ∗Head | S1 | SWITCHING |
|---|---|---|
| REC E | 0 | H |
| PRE E | 0 | L |
| REC O | 1 | H |
| PRE O | 1 | L |
| PB E | 2 | H |
| PB O | 2 | L |

S2-7, 8 : ON

**Note**

When check the output condition of the PB E/O head, enter the maintenance menu and set the follwing items.
Playback the alignment tape XH5-1A2 (Mini cassette) or XH5-1AP2 (Mini cassette).

**[MAINTENANCE MENU]**

→ [ELECTRICAL ADJUST] → [EQ manual] → [DVCAM] → [CAMmo dl(or co, ph)] or [CAMme dl(or ag, co, ph)] (Select the either)

DSR-1600/P

| ∗Head | S1 | SWITCHING |
|---|---|---|
| PB E | 2 | H |
| PB O | 2 | L |

S2-7, 8 : ON

∗: An object head when tape path adjustment

## 8-2. Tape Path Adjustment

### Basic knowledge

To perform the tracking adjustment using the alignment tape (XH2-1AST), refer the following items.

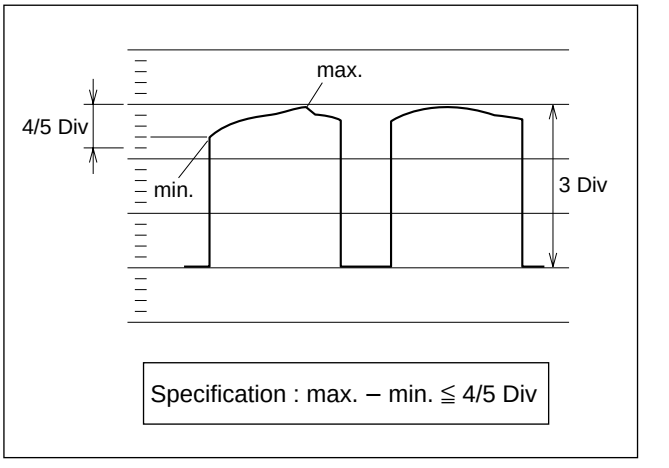
- For the procedure to enter the maintenance menu, refer to Section 5-2-2.
- For the procedure to exit the maintenance menu, refer to Section 5-2-3.
- For the operating procedure of the maintenance menu during the tracking adjustment, refer to Section 8-1.

### Tools

- Alignment tape, XH2-1AST : 8-967-999-02
- Tape path adjustment board, DJ-461 : J-6444-610-B
- Path adjustment board connection cable, DJ-472 : J-6444-720-A
- Dual trace oscilloscope

### Check procedure

1. Connect the oscilloscope as follows :
   CH-1 : TP2 / DJ-461
   CH-2 : TP3 / DJ-461
   TRIG : CH-2
2. Insert the alignment tape XH2-1AST on the VTR.
3. Put the unit into PLAY mode.
4. Adjust the variable VOLTS/DIV control of the oscilloscope so that the maximum amplitude of the RF waveform becomes the three DIVISIONs on the oscilloscope.




5. Adjust the RF waveform until it satisfies the specification by changing the height of the S2 and T2 guides.
   - When the RF waveform at the entrance side forms the shape of the solid line shown in Fig.1, turn the guide S2 clockwise to obtain the flat waveform.

   **Note**

   This adjustment must end with the clockwise rotation of the guide S2.

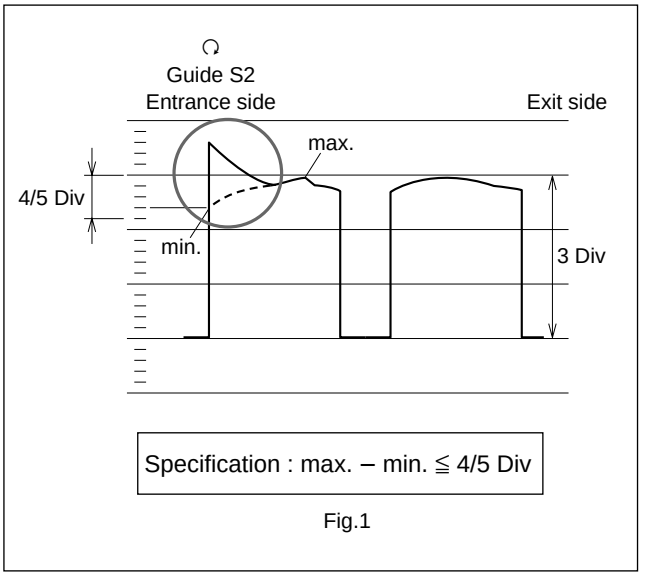



Fig.1

- When the RF waveform at the entrance side forms the shape of the solid line shown in Fig.2, turn the guide S2 counterclockwise to waveform as shown by the solid line in Fig.1. Then turn the guide S2 clockwise to obtain the desired waveform.

**Note**

This adjustment must end with the clockwise rotation of the guide S2.

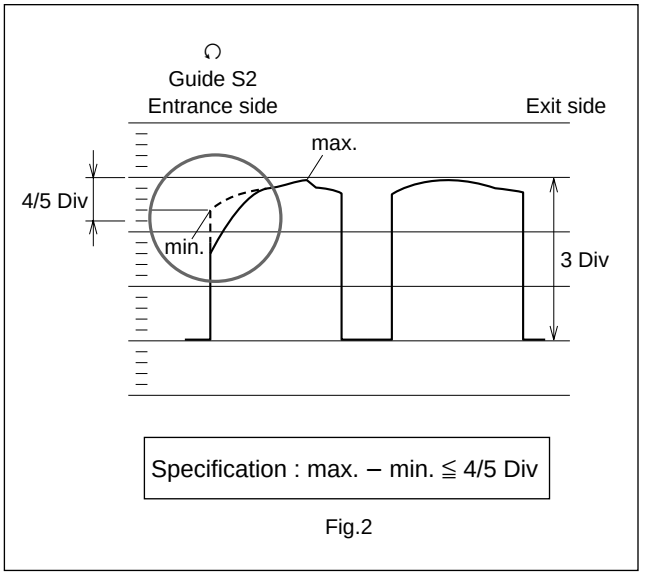



Fig.2

- When the RF waveform at the exit side forms the shape of the solid line shown in Fig.3, turn the guide T2 clockwise to obtain the flat waveform.

**Note**

This adjustment must end with the clockwise rotation of the guide S2.

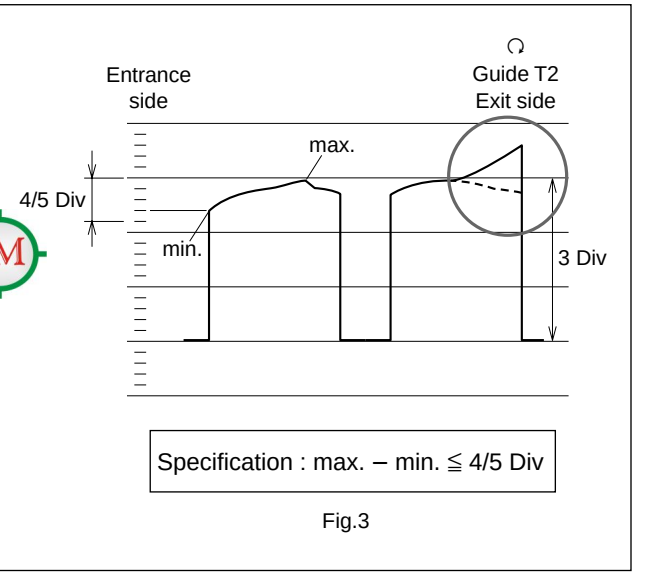
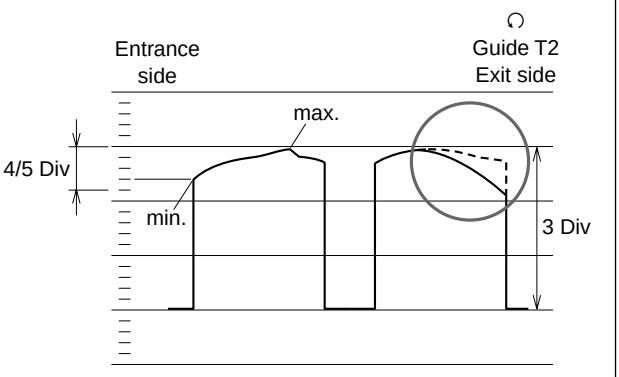



Fig.3

- When the RF waveform at the exit side forms the shape of the solid line shown in Fig.4, turn the guide T2 counterclockwise to waveform as shown by the solid line in Fig.3. Then turn the guide T2 clockwise to obtain the desired waveform.

  **Note**

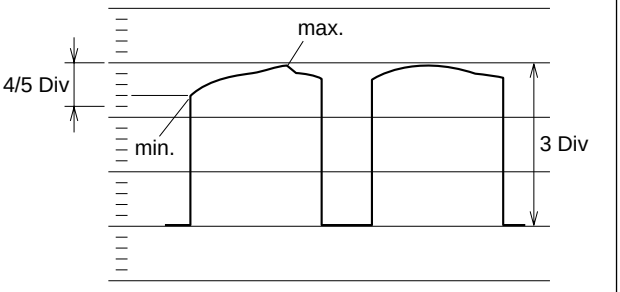
  This adjustment must end with the clockwise rotation of the guide T2.




Specification : max. – min. ≦ 4/5 Div

Fig.4

6. Measure the minimum amplitude of the RF waveform, and confirm that the amplitude difference between the maximum and the minimum of the RF waveform satisfies the specification.




Specification : max. – min. ≦ 4/5 Div

## 8-3. RF Switching Position Adjustment

Be sure to perform the RF switching position adjustment whenever the tape path adjustment (refer to Section 8-2) is performed.
Perform this adjustment in the AUTO mode.

### Basic knowledge

To perform the RF switching position adjustment using the alignment tape (XH5-1A2 for NTSC or XH5-1AP2 for PAL), refer the following items.

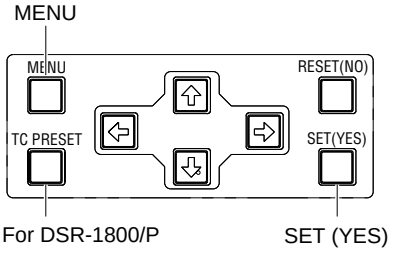
- For the procedure to enter the maintenance menu, refer to Section 5-2-2.
- For the procedure to exit the maintenance menu, refer to Section 5-2-3.

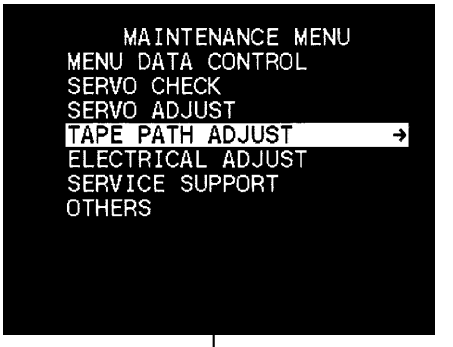
### Tools

| | | |
|---|---|---|
| Alignment tape, | XH5-1A2 : | 8-967-999-22 (for NTSC) |
| | XH5-1AP2 : | 8-967-999-26 (for PAL) |

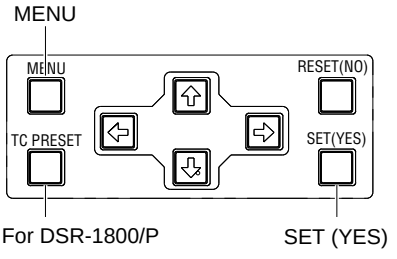
### Adjustment procedure
### RF switching position adjustment using the [AUTO adjustment]

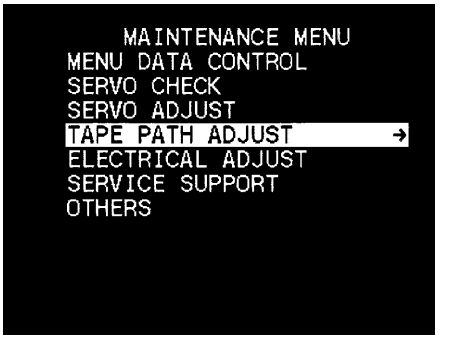
1. Enter the maintenance menu.
2. Move the cursor to “TAPE PATH ADJUST” which is displayed with a white background using the [↑] or [↓] key.



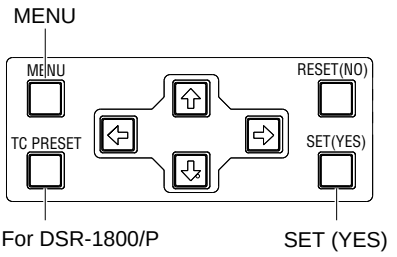




3. Press the [→] key.
   “TAPE PATH ADJUST” is selected and its lower layer submenu appears.

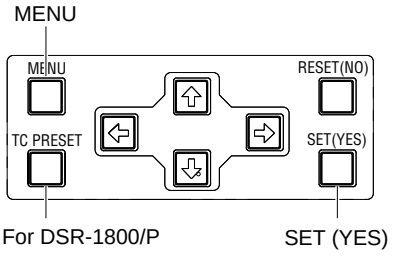


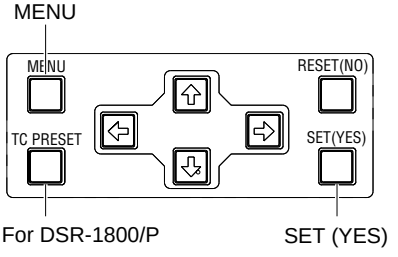
4. Move the cursor to “RF SWITCHING POSITION” which is displayed with a white background using the [↑] or [↓] key.



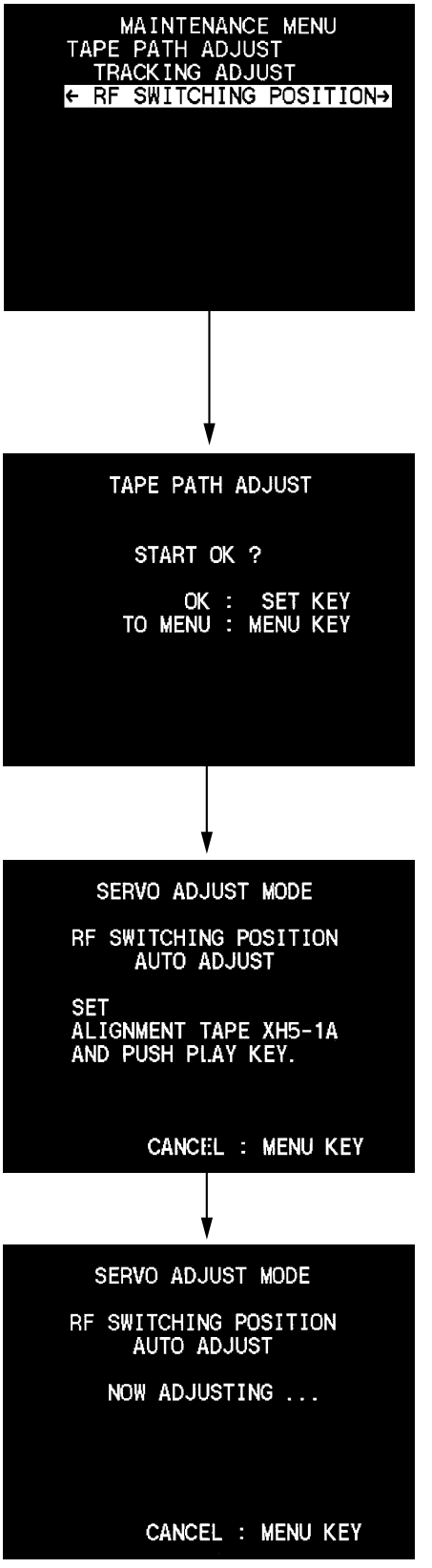

5. Select “START OK?” by pressing the [→] key.




6. Press the [SET (YES)] key.




7. Playback the alignment tape XH5-1A2 for NTSC or XH5-1AP2 for PAL. (display ②)
   Then the unit starts the RF switching position automatic adjustment. (display ③)



④

8. When the adjustment is completed, the display ⑤ "COMPLETE" appears and alignment tape is automatically ejected.

   **Note**

   When the "ADJUST INCOMPLETE" appears on the monitor screen, check that the alignment tape which is played back is XH5-1A2 for NTSC, or XH5-1AP2 for PAL.

⑤

9. Press the MENU key to return to the maintenance menu.

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## 8-4. Tape Path Adjustment Confirmation

Be sure to perform tracking adjustment described in Section 8-3 after performing the tracking adjustment in Section 8-2.

### Basic knowledge

To perform tracking adjustment using the alignment tape (XH2-1AST), refer to the following items.

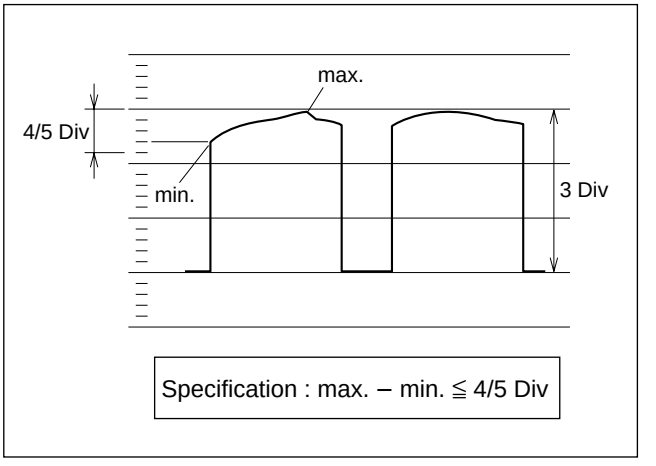
- For the procedure to enter the maintenance menu, refer to Section 5-2-2.
- For the procedure to exit the maintenance menu, refer to Section 5-2-3.
- For the operating procedure of the maintenance menu during the tracking adjustment, refer to Section 8-1.

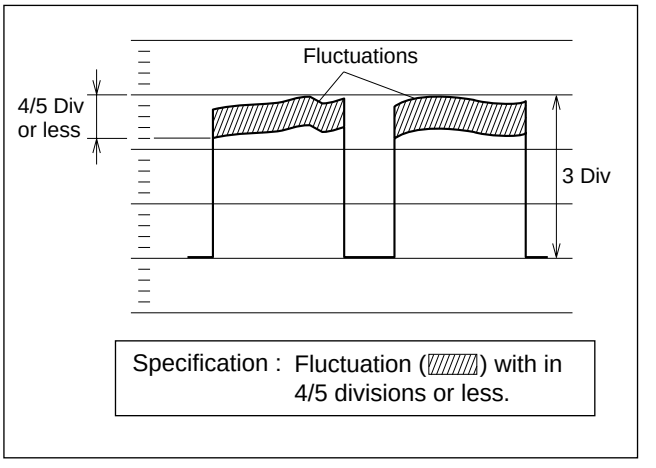
### Tools

- Alignment tape, XH2-1AST : 8-967-999-02
- Tape path adjustment board, DJ-461 : J-6444-610-B
- Path adjustment board connection cable, DJ-472 : J-6444-720-A
- Dual trace oscilloscope

### Check procedure

1. Connect the oscilloscope as follows :
   CH-1 : TP2 / DJ-461
   CH-2 : TP3 / DJ-461
   TRIG : CH-2
2. Insert the alignment tape XH2-1AST on the VTR.
3. Put the unit into PLAY mode.
4. Adjust the variable VOLTS/DIV control of the oscilloscope so that the maximum amplitude of the RF waveform becomes the three DIVISIONs on the oscilloscope.
5. Measure the minimum amplitude of the RF waveform, and confirm that the amplitude difference between the maximum and the minimum of the RF waveform satisfies the specification.
6. Confirm that fluctuation of the RF waveform satisfies the specification.



# 8-5. Search Forward (×5) Waveform Check

## Basic knowledge

To perform tracking adjustment using the alignment tape (XH2-1AST), refer to the following items.

- For the procedure to enter the maintenance menu, refer to Section 5-2-2.
- For the procedure to exit the maintenance menu, refer to Section 5-2-3.
- For the operating procedure of the maintenance menu during the tracking adjustment, refer to Section 8-1.

## Tools

- Alignment tape, XH2-1AST : 8-967-999-02
- Tape path adjustment board, DJ-461 : J-6444-610-B
- Path adjustment board connection cable, DJ-472 : J-6444-720-A
- Dual trace oscilloscope

## Check procedure

1. Connect the oscilloscope as follows :
   CH-1 : TP2 / DJ-461
   CH-2 : TP3 / DJ-461
   TRIG : CH-2
2. Insert the alignment tape XH2-1AST on the VTR.
3. Set the JOG dial search FORWARD to the ×5 position.
4. Adjust the variable VOLTS/DIV control of the oscilloscope so that the maximum amplitude of the RF waveform becomes the three DIVISIONs on the oscilloscope.
5. Confirm that the RF waveform should be almost the same amplitude with constant intervals as shown in Fig.1.
6. Confirm that the RF waveform raises up within two seconds at the specified amplitude when the mode is changed from search FORWARD (×5) to PLAY.

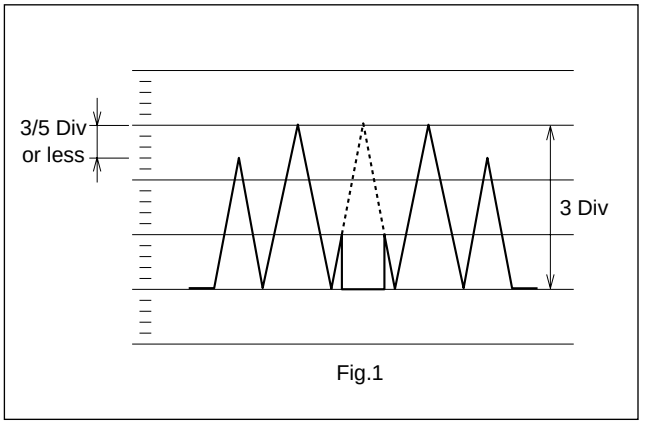
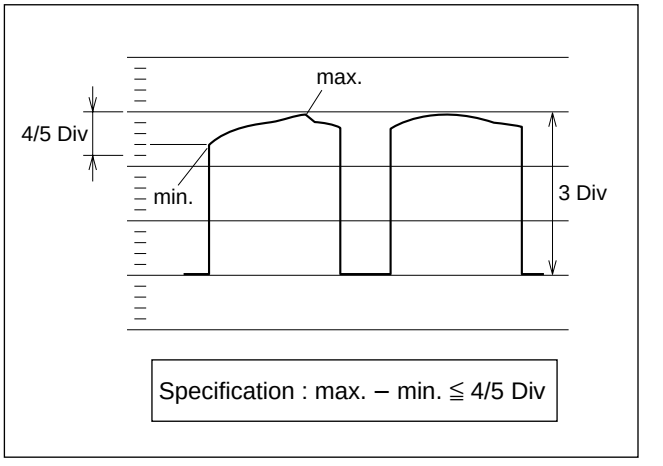



Fig.1



# 8-6. Search Reverse (×5) Waveform Check

## Basic knowledge

To perform tracking adjustment using the alignment tape (XH2-1AST), refer to the following items.

- For the procedure to enter the maintenance menu, refer to Section 5-2-2.
- For the procedure to exit the maintenance menu, refer to Section 5-2-3.
- For the operating procedure of the maintenance menu during the tracking adjustment, refer to Section 8-1.

## Tools

- Alignment tape, XH2-1AST : 8-967-999-02
- Tape path adjustment board, DJ-461 : J-6444-610-B
- Path adjustment board connection cable, DJ-472 : J-6444-720-A
- Dual trace oscilloscope

## Check procedure

1. Connect the oscilloscope as follows :
   CH-1 : TP2 / DJ-461
   CH-2 : TP3 / DJ-461
   TRIG : CH-2
2. Insert the alignment tape XH2-1AST on the VTR.
3. Set the JOG dial search REVERSE to the ×5 position.
4. Adjust the variable VOLTS/DIV control of the oscilloscope so that the maximum amplitude of the RF waveform becomes the three DIVISIONs on the oscilloscope.
5. Confirm that the RF waveform should be almost the same amplitude with constant intervals as shown in Fig.1.
6. Confirm that the RF waveform raises up within two seconds at the specified amplitude when the mode is changed from search REVERSE (×5) to PLAY.

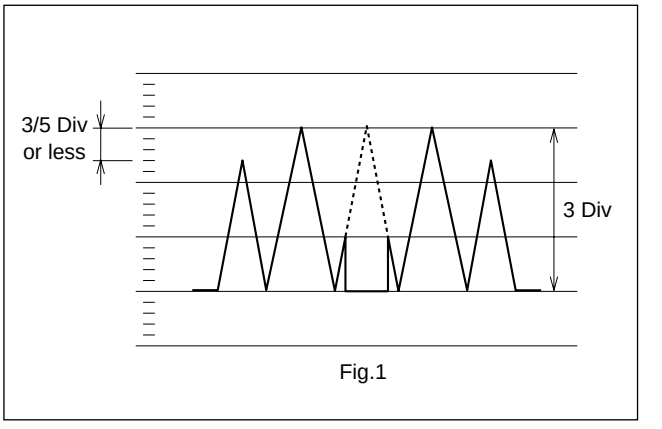
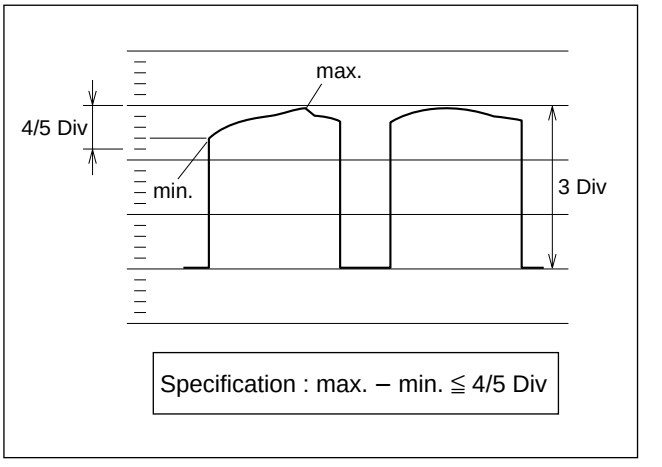



Fig.1



# 8-7. RF Waveform Raiseup Check

## Basic knowledge

To perform tracking adjustment using the alignment tape (XH2-1AST), refer to the following items.

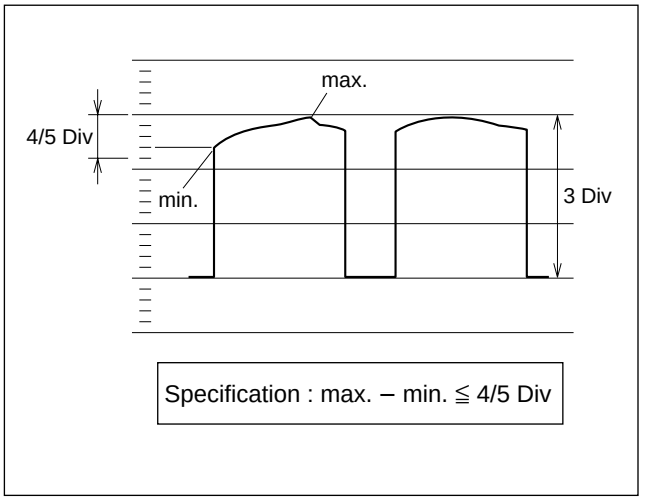
- For the procedure to enter the maintenance menu, refer to Section 5-2-2.
- For the procedure to exit the maintenance menu, refer to Section 5-2-3.
- For the operating procedure of the maintenance menu during the tracking adjustment, refer to Section 8-1.

## Tools

- Alignment tape, XH2-1AST : 8-967-999-02
- Tape path adjustment board, DJ-461 : J-6444-610-B
- Path adjustment board connection cable, DJ-472 : J-6444-720-A
- Dual trace oscilloscope

## Check procedure

1. Connect the oscilloscope as follows :
   CH-1 : TP2 / DJ-461
   CH-2 : TP3 / DJ-461
   TRIG : CH-2
2. Insert the alignment tape XH2-1AST on the VTR.
3. Confirm that the RF waveform raises up within two seconds at the specified amplitude when the mode is changed from EJECT → PLAY → EJECT → PLAY repeatedly.
4. Confirm that the RF waveform raises up within two seconds at the specified amplitude when the mode is changed from FF → PLAY and from REW → PLAY.



# 8-8. Tape Curl Check at Tape Guide

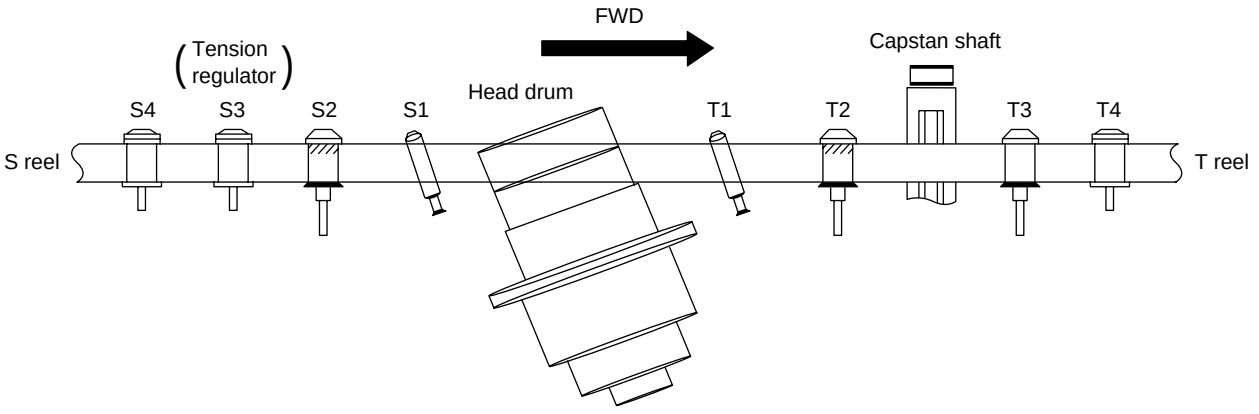
## Tools

- Alignment tape, XH2-1AST : 8-967-999-02
- Dental mirror : J-6080-029-A

## Check procedure

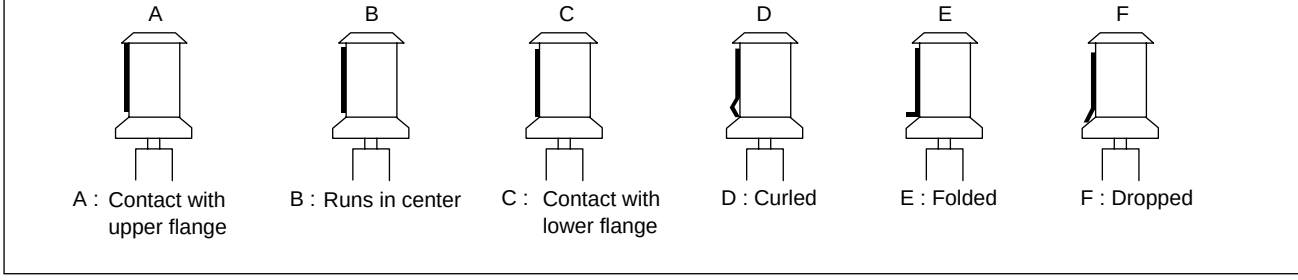
Confirm that tape runs at each tape guide as specified by the following figure when the unit put into the modes of PLAY, FF, REW, search FORWARD ×5 and search REVERSE ×5 respectively.

### Tape running condition




The hatched areas (marked by /////) are contacting with tape or pressing tape.

| | Tape running condition | | | | | |
|---|---|---|---|---|---|---|
| Tape guide | A (Contact with upper flange) | B (Runs in the center) | C (Contact with lower flange) | D (Curled) | E (Folded) | F (Dropped) |
| S4 | ○ | ○ | ○ | × | × | × |
| S3 | ○ | ○ | ○ | × | × | × |
| S2 | ○ | × | × | × | × | × |
| T2 | ○ | × | × | × | × | × |
| T3 | ○ | ○ | ○ | × | × | × |
| T4 | ○ | ○ | ○ | × | × | × |



# Section 9
# Adjustment When Replacing Board

## 9-1. Adjustment/Check Items When Replacing Board

No adjustment is required for the board other than below.

| Board name | Setting/Adj. (Reference Section) | Contents |
|---|---|---|
| SSP-24 board (DSR-1800/P) | 10-2. Audio Adjustment | 10-2-1. Audio OUTPUT Level Adjustment<br>10-2-2. Audio EE Level Adjustment |
| | 5. Maintenance Menu | 5-3-4. S/T-REEL & CAPSTAN Adjustment |
| RP-120 board (DSR-1800/P) | 5. Maintenance Menu | 5-3-6. Electrical Adjust<br>PLL F0 Adjustment<br>EQ (DVCAM) Adjustment<br>EQ (DV) Adjustment |
| VPR-71 board (DSR-1800/P) | 10-3. Video Adjustment | 10-3-1. to 10-3-32. |
| IF-820 board (DSR-1600/P) | 10-2. Audio Adjustment | 10-2-1. Audio OUTPUT Level Adjustment |
| | 10-3. Video Adjustment | 10-3-1. to 10-3-32. |
| SSP-23 board (DSR-1600/P) | 5. Maintenance Menu | 5-3-4. S/T-REEL & CAPSTAN Adjustment |
| PRE-45 board (DSR-1600/P) | 5. Maintenance Menu | 5-3-6. Electrical Adjust<br>PLL F0 Adjustment<br>EQ (DVCAM) Adjustment<br>EQ (DV) Adjustment |
| DR-428 board | 5. Maintenance Menu | 5-3-1. Menu Data Control<br>MENU/SW DATA SAVE/LOAD<br>5-3-4. Servo Adjust<br>TENTION Adjustment<br>5-3-6. Vol Adjust |
| | 6-2. Hours Meter | Initialize the Resetable Hours Meter |
| | Operating Instructions<br>Chapter 4. Setup Menu | Resetting of Setup Menu Data |

# Section 10
# Electrical Alignment

## 10-1. Electrical Alignment Overview

### 10-1-1. List of Adjustment Parts

**SSP-24 (DSR-1800/P)**


RV1151 CH-1 EE Level ..... 10-4
RV1251 CH-2 EE Level ..... 10-4
RV1351 CH-3 EE Level ..... 10-4
RV1451 CH-4 EE Level ..... 10-4
RV2101 CH-1 OUTPUT Level ..... 10-4
RV2201 CH-2 OUTPUT Level ..... 10-4
RV2301 CH-3 OUTPUT Level ..... 10-4
RV2401 CH-4 OUTPUT Level ..... 10-4


**VPR-71 (DSR-1800/P)**


CT600 SPCK Error ..... 10-21
RV200 REC S VIDEO Chroma Level ..... 10-29
RV202 REC A/D Y Level ..... 10-26
RV300 REC COMPOSITE Y Level ..... 10-27
RV301 REC COMPOSITE Chroma Level ..... 10-28
RV302 REC COMPOSITE Chroma Level ..... 10-28
RV400 COMPOSITE 4Fsc PLL DC ..... 10-22
RV500 REC Y Level ..... 10-24
RV503 REC Y Clamp Level ..... 10-23
RV504 REC COMPOSITE Y/B-Y Delay ..... 10-30
RV505 REC S VIDEO Y/B-Y Delay ..... 10-32
RV506 REC COMPONENT Y/B-Y Delay ..... 10-31
RV507 REC COMPOSITE Y/R-Y Delay ..... 10-30
RV508 REC S VIDEO Y/R-Y Delay ..... 10-32
RV509 REC COMPONENT Y/R-Y Delay ..... 10-31
RV701 PB COMPOSITE Y/C Delay ..... 10-16
RV703 PB COMPONENT Y/B-Y Delay ..... 10-17
RV704 COMPONENT B-Y OUT Level ..... 10-7
RV705 PB COMPONENT Y/R-Y Delay ..... 10-17
RV706 COMPONENT R-Y OUT Level ..... 10-7
RV800 ENC R-Y Level ..... 10-13
RV801 ENC B-Y Level ..... 10-13
RV802 ENC V SC Leak ..... 10-11
RV803 ENC U SC Leak ..... 10-11
RV804 PB Burst Level ..... 10-14
RV900 COMPONENT Y OUT Level ..... 10-7
RV901 PB S VIDEO Chroma Level ..... 10-15
RV902 VIDEO OUT 1 Video/Sync Level ..... 10-9
RV905 VIDEO OUT 2 Video Level ..... 10-10
RV1000 REF. INT SCH Phase ..... 10-20
RV1001 REF. VIDEO OUT Sync Level ..... 10-19
RV1100 ENC V (R-Y) Phase ..... 10-12
RV1101 PB INT SCH Phase ..... 10-18
RV1200 HCK Frequency ..... 10-6
RV1201 INT SC Frequency ..... 10-6


**IF-820 (DSR-1600/P)**


RV201 PB COMPOSITE Y/C Delay ..... 10-16
RV203 PB COMPONENT Y/B-Y Delay ..... 10-17
RV204 COMPONENT B-Y OUT Level ..... 10-7
RV205 PB COMPONENT Y/R-Y Delay ..... 10-17
RV206 COMPONENT R-Y OUT Level ..... 10-8
RV300 ENC R-Y Level ..... 10-13
RV301 ENC B-Y Level ..... 10-13
RV302 ENC V SC Leak ..... 10-11
RV303 ENC U SC Leak ..... 10-11
RV304 PB Burst Level ..... 10-14
RV400 COMPONENT Y OUT Level ..... 10-7
RV401 PB S VIDEO Chroma Level ..... 10-15
RV402 VIDEO OUT 1 Video/Sync Level ..... 10-9
RV405 VIDEO OUT 2 Video Level ..... 10-10
RV500 REF. INT SCH Phase ..... 10-20
RV501 REF. VIDEO OUT Sync Level ..... 10-19
RV600 ENC V (R-Y) Phase ..... 10-12
RV601 PB INT SCH Phase ..... 10-18
RV700 HCK Frequency ..... 10-6
RV701 INT SC Frequency ..... 10-6
RV1101 CH-1 OUTPUT Level ..... 10-4
RV1201 CH-2 OUTPUT Level ..... 10-4
RV1301 CH-3 OUTPUT Level ..... 10-4
RV1401 CH-4 OUTPUT Level ..... 10-4


**SDI-61**


RV201 SDTI IN FREE RUN ..... 10-33
RV301 SDTI OUT FREE RUN ..... 10-33


**SDI-61A**


RV301 SDTI OUT FREE RUN ..... 10-33


**SDI-62**


RV101 SDI IN FREE RUN ..... 10-33
RV401 SDI OUT FREE RUN ..... 10-33


**SDI-62A**


RV401 SDI OUT FREE RUN ..... 10-33

## 10-1-2. Measuring Equipment and Tools

| Type of measuring equipment | Equivalent | Remarks |
|---|---|---|
| Oscilloscope | Tektronix 2445 | 150 MHz or more |
| Video signal generator | TSG-130A (Op.02) | for NTSC |
| | TSG-131A (Op.02) | for PAL |
| Waveform monitor | Tektronix 1760 Op. SC/1765 Op. SC | |
| Audio signal generator | HP339A | |
| Audio level meter | HP3400A/MeguroMN-446 | |
| Frequency counter | Advantest TR5821 | |
| Extension board | DJ-498 (J-6444-980-A) | |
| Blank tape | DVM30ME, DVM30NME | On the market |

## 10-1-3. Reference Tape for Alignment

### XH5-1A2 (8-967-999-22) (for NTSC)

Recording contents are followings.

| VIDEO | TIME CODE (h) (m) (s) | REC (s) | AUDIO | | |
|---|---|---|---|---|---|
| Black Burst | 23 : 59 : 00 | 60 | No Signal | | |
| 75 % Full Color Bars | 00 : 00 | 60 | 1 kHz | | |
| 60 % Multi Burst | 01 : 00 | 60 | 20 Hz | | |
| Bowtie with Mod 12.5T | 02 : 00 | 30 | 14.5 kHz | | |
| Shallow Ramp | 02 : 30 | 30 | 10 kHz | | |
| | 03 : 00 | 30 | No Signal | | 32 kHz |
| Cross Hatch (index) | 03 : 30 | 30 | 1 kHz 0 dBFS | | 4 ch |
| Line 17 | 04 : 00 | 40 | 1 ch | 1 kHz | |
| 75 % Full Color Bars | 04 : 40 | 40 | 2 ch | | |
| Quad Phase | 05 : 20 | 40 | 3 ch | | |
| | 06 : 00 | 40 | 4 ch | | |
| Black Burst | 06 : 40 | 5 | No Signal | | |
| | 06 : 45 | 5 | | | |
| 60 % Multi Burst (for Composite) | 06 : 50 | 60 | 1 kHz | | |
| Mod 12.5T | 07 : 50 | 30 | 20 Hz | | |
| Shallow Ramp (B-Y/R-Y OFF) | 08 : 20 | 30 | 20 kHz | | |
| | 08 : 50 | 30 | 10 kHz | | |
| Cross Hatch (index) | 09 : 20 | 30 | 1 kHz 0 dBFS | | |
| Chroma Noise | 09 : 50 | 30 | | | |
| Line 17 | 10 : 20 | 30 | | | |
| 75 % Full Color Bars | 10 : 50 | 180 | | | 48 kHz |
| 60 % Multi Burst | 13 : 50 | 60 | | | 2 ch |
| Mod 12.5T | 14 : 50 | 30 | | | |
| Shallow Ramp | 15 : 20 | 60 | 1 kHz | | |
| 75 % Full Color Bars | 16 : 20 | 100 | | | |
| 75 % Full Color Bars (R-Y OFF) | 18 : 00 | 180 | | | |
| 75 % Full Color Bars (B-Y OFF) | 21 : 00 | 180 | | | |
| Blanking Marker | 24 : 00 | 180 | | | |
| Line 17 (R-Y OFF) | 27 : 00 | 180 | | | |
| Line 17 (B-Y OFF) | 30 : 00 | 180 | | | |

**∗1 Audio levels are –20 dBFS (Reference), except 1 kHz 0 dBFS part.**

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## XH5-1AP2 (8-967-999-26) (for PAL)

Recording contents are followings.

| VIDEO | TIME CODE (h) (m) (s) | REC (s) | AUDIO | | |
|---|---|---|---|---|---|
| Black Burst | 23 : 59 : 00 | 60 | No Signal | | 32 kHz 4 ch |
| 100 % Full Color Bars | 00 : 00 | 60 | 1 kHz | | |
| 60 % Multi Burst | 01 : 00 | 60 | 20 Hz | | |
| Bowtie with Mod 10T | 02 : 00 | 30 | 14.5 kHz | | |
| Shallow Ramp | 02 : 30 | 30 | 10 kHz | | |
| | 03 : 00 | 30 | No Signal | | |
| Cross Hatch (index) | 03 : 30 | 30 | 1 kHz 0 dBFS | | |
| Line 17 | 04 : 00 | 40 | 1 ch | 1 kHz | |
| 100 % Full Color Bars | 04 : 40 | 40 | 2 ch | | |
| Quad Phase | 05 : 20 | 40 | 3 ch | | |
| | 06 : 00 | 40 | 4 ch | | |
| Black Burst | 06 : 40 | 5 | No Signal | | |
| | 06 : 45 | 5 | | | 48 kHz 2 ch |
| 60 % Multi Burst (for Composite) | 06 : 50 | 60 | 1 kHz | | |
| Mod 10T | 07 : 50 | 30 | 20 Hz | | |
| Shallow Ramp (B-Y/R-Y OFF) | 08 : 20 | 30 | 20 kHz | | |
| | 08 : 50 | 30 | 10 kHz | | |
| Cross Hatch (index) | 09 : 20 | 30 | 1 kHz 0 dBFS | | |
| Chroma Noise | 09 : 50 | 30 | 1 kHz | | |
| Line 17 | 10 : 20 | 30 | | | |
| 100 % Full Color Bars | 10 : 50 | 180 | | | |
| 60 % Multi Burst | 13 : 50 | 60 | | | |
| Mod 10T | 14 : 50 | 30 | | | |
| Shallow Ramp | 15 : 20 | 60 | | | |
| 100 % Full Color Bars | 16 : 20 | 100 | | | |
| 100 % Full Color Bars (R-Y OFF) | 18 : 00 | 180 | | | |
| 100 % Full Color Bars (B-Y OFF) | 21 : 00 | 180 | | | |
| Blanking Marker | 24 : 00 | 180 | | | |
| Line 17 (R-Y OFF) | 27 : 00 | 180 | | | |
| Line 17 (B-Y OFF) | 30 : 00 | 180 | | | |

**∗1 Audio levels are –18 dBFS (Reference), except 1 kHz 0 dBFS part.**

# 10-2. Audio Adjustment

## 10-2-1. Audio OUTPUT Level Adjustment

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • MENU<br>ENHANCED<br>↓<br>AU REF LEVEL ; −20 dB (for NTSC)<br>−18 dB (for PAL)<br>OUTPUT LEVEL ; +4 dB<br>VIDEO INPUT SELECT ; SG<br>AUDIO INPUT SELECT ; SG<br>• AUDIO REC & PB AUDIO VR/<br>Control panel ; PRESET<br>• PB mode<br>1 kHz Ref. level (32 kHz ; 4CH)/SG (1 kHz) | AUDIO OUTPUT CH-1, 2, 3, 4 (600 Ω loaded)<br><br>Spec. +4.0 ±0.1 dBm | [DSR-1800/P]<br>CH-1 ;<br>⊘RV201/SSP-24 (C-3)<br>CH-2 ;<br>⊘RV202/SSP-24 (C-3)<br>CH-3 ;<br>⊘RV203/SSP-24 (C-3)<br>CH-4 ;<br>⊘RV204/SSP-24 (C-3)<br><br>[DSR-1600/P]<br>CH-1 ;<br>⊘RV1101/IF-820 (F-3)<br>CH-2 ;<br>⊘RV1201/IF-820 (F-3)<br>CH-3 ;<br>⊘RV1301/IF-820 (F-3)<br>CH-4 ;<br>⊘RV1401/IF-820 (G-3) |

## 10-2-2. Audio EE Level Adjustment (DSR-1800/P)

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • MENU<br>ENHANCED<br>↓<br>AU REF LEVEL ; −20 dB (for NTSC)<br>−18 dB (for PAL)<br>OUTPUT LEVEL ; +4 dB<br>VIDEO INPUT SELECT ; SG<br>AUDIO INPUT SELECT ; ANALOG<br>• AUDIO REC & PB AUDIO VR/<br>Control panel ; PRESET<br>• AUDIO INPUT CH-1/CH-2/CH-3/CH-4 ;<br>1 kHz, +4 dBu<br>• EE mode | AUDIO OUTPUT CH-1, 2, 3, 4 (600 Ω loaded)<br><br>Spec. +4.0 ±0.3 dBm | CH-1 ;<br>⊘RV1151/SSP-24 (A-3)<br>CH-2 ;<br>⊘RV1251/SSP-24 (B-3)<br>CH-3 ;<br>⊘RV1351/SSP-24 (B-3)<br>CH-4 ;<br>⊘RV1451/SSP-24 (B-3) |

## 10-3. Video Adjustment

**Note**

When replaced the board, do VOLUME ADJUST first.
MAINTENANCE MENU → EL Adjust → Vol adj (Refer to Section 5-3-6.)

### [SETUP MENU]

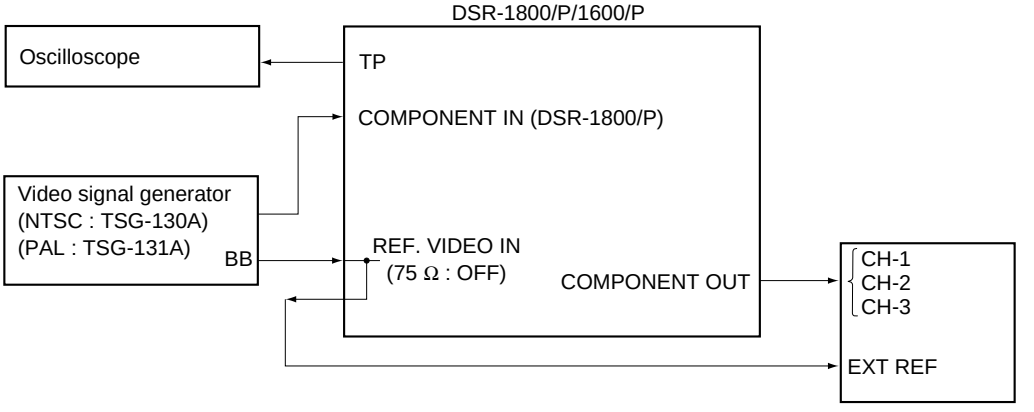
This setting should be fixed in position unless otherwise specified.

PROCESS CONTROL
Ctrl dev ; REMOTE

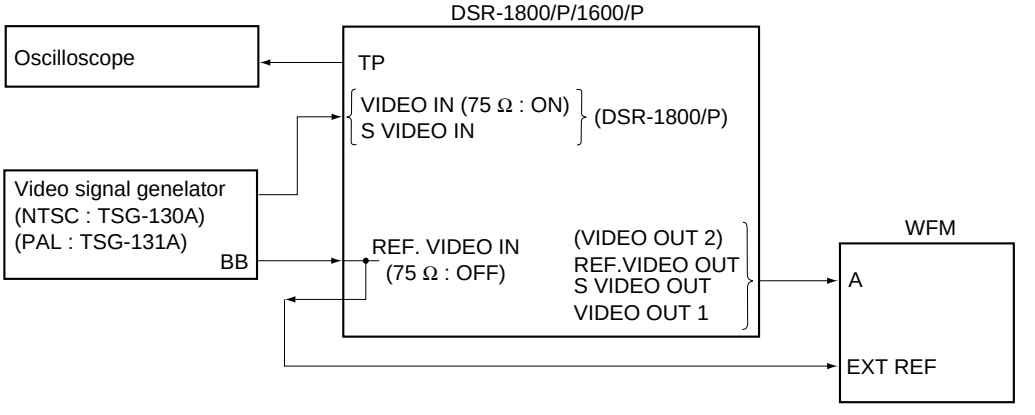
### [Connection]

Connect some equipment as following unless otherwise specified.

(Connection 1)




(Connection 2)

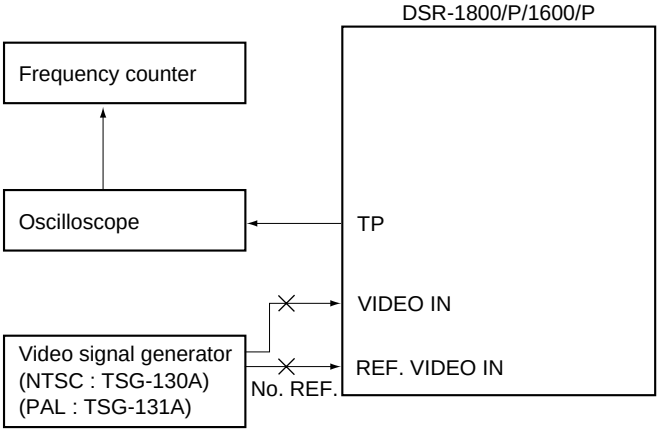


## 10-3-1. INT SC Frequency Adjustment

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| Oscilloscope or voltmeter<br>• STOP mode<br><br><br><br><br><br><br>Connection 1 | [DSR-1800/P]<br>① Mesure the voltage (Vo) at TP1202/ VPR-71 (F-2).<br>② Measure the voltage at TP1204/ VPR-71 (F-2)<br><br>[DSR-1600/P]<br>① Mesure the voltage (Vo) at TP702/ IF-820 (A-2).<br>② Measure the voltage at TP704/ IF-820 (A-2)<br><br>Spec. V = Vo ±0.1 Vdc | [DSR-1800/P]<br>⊘RV1201/VPR-71 (F-2)<br><br>[DSR-1600/P]<br>⊘RV701/IF-820 (A-2) |

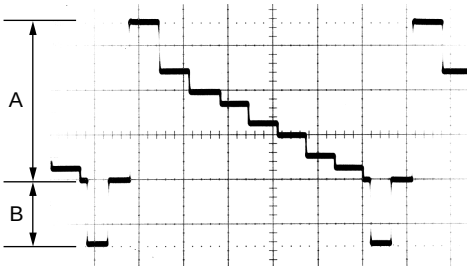
## 10-3-2. HCK Frequency Adjustment

(Connection)

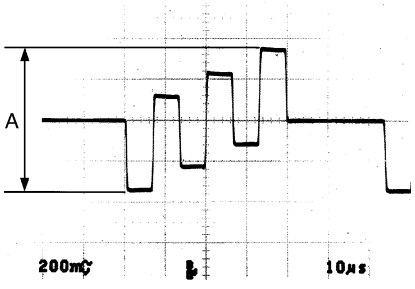



| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| Frequency counter<br>• STOP mode<br>• REF. VIDEO IN ; No signal<br>• VIDEO IN Select ; Composite<br>• VIDEO IN ; No signal | [DSR-1800/P]<br>TP1203/VPR-71 (F-2)<br><br>[DSR-1600/P]<br>TP703/IF-820 (A-3)<br><br>Spec. f = 13,500,000 ±35 Hz | [DSR-1800/P]<br>⊘RV1200/VPR-71 (F-2)<br><br>[DSR-1600/P]<br>⊘RV700/IF-820 (A-2) |

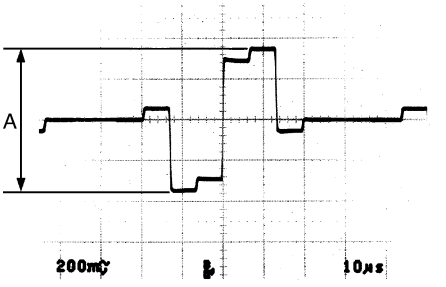
## 10-3-3. COMPONENT Y OUT Level Adjustment

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| [For NTSC]<br>WFM or Oscilloscope<br>• Setup add ; ON<br>• PB mode<br>75 % Color bars/XH5-1A2<br><br>[For PAL]<br>WFM or Oscilloscope<br>• PB mode<br>100 % Color bars/XH5-1AP2<br><br>Connection 1 | COMPONENT Y OUT (75 Ω terminated)<br><br>(A) Y/S-Y Level<br><br>TRIG : REF. VIDEO<br>  <br><br><br>Spec.<br>[For NTSC]<br>A = 0.714 ±0.007 V (100 ±1 IRE)<br>B = 0.286 ±0.006 V (40 ±1.0 IRE)<br>[For PAL]<br>A = 0.700 ±0.007 V<br>B = 0.300 ±0.006 V | [DSR-1800/P]<br>⊘RV900/VPR-71 (E-5)<br><br>[DSR-1600/P]<br>⊘RV400/IF-820 (C-5)<br><br>B : Check only |

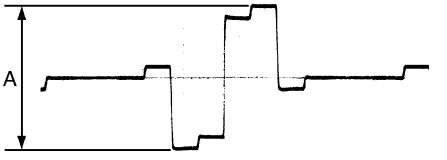
## 10-3-4. COMPONENT B-Y OUT Level Adjustment

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| [For NTSC]<br>WFM or Oscilloscope<br>• Setup add ; ON<br>• PB mode<br>75 % Color bars/XH5-1A2<br><br>[For PAL]<br>WFM or Oscilloscope<br>• PB mode<br>100 % Color bars/XH5-1AP2<br><br>Connection 1 | COMPONENT B-Y OUT (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br>  <br><br><br>Spec.<br>[For NTSC]<br>A = 0.700 ±0.007 V (98 ±1 IRE)<br>[For PAL]<br>A = 0.700 ±0.700 V | [DSR-1800/P]<br>⊘RV704/VPR-71 (F-6)<br><br>[DSR-1600/P]<br>⊘RV204/IF-820 (C-5) |

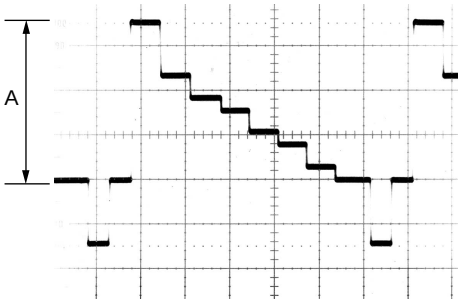
## 10-3-5. COMPONENT R-Y OUT Level Adjustment

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| [For NTSC]<br>WFM or Oscilloscope<br>• Setup add ; ON<br>• PB mode<br>75 % Color bars/XH5-1A2<br><br>[For PAL]<br>WFM or Oscilloscope<br>• PB mode<br>100 % Color bars/XH5-1AP2<br><br>Connection 1 | COMPONENT R-Y OUT (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br>  <br><br>Spec.<br>[For NTSC]<br>A = 0.700 ±0.007 V p-p (98 ±1 IRE)<br>[For PAL]<br>A = 0.700 ± 0.007 V p-p | [DSR-1800/P]<br>RV706/VPR-71 (F-6)<br><br>[DSR-1600/P]<br>RV206/IF-820 (C-5) |

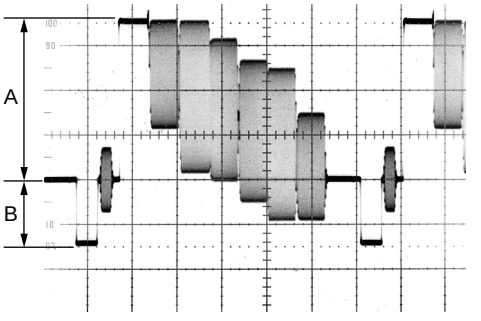
## 10-3-6. SETUP OFF Chroma Level Check (NTSC only)

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• PB mode<br>75 % Color bars/XH5-1A2<br><br>**Note**<br>Check that Setup add ; OFF<br><br>Connection 1 | COMPONENT R-Y OUT (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br>  <br><br>Spec. A = 0.757 ±0.007 V p-p (106 ±1 IRE) | |

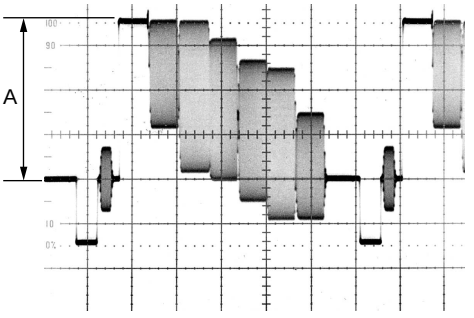
## 10-3-7. S VIDEO OUT Y Level Check

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br><br>Connection 2 | S VIDEO (Y) OUT (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br>  <br><br><br>Spec.<br>[For NTSC]<br>A = 0.714 ±0.007 V (100 ±1 IRE)<br>[For PAL]<br>A = 0.700 ±0.007 V | |

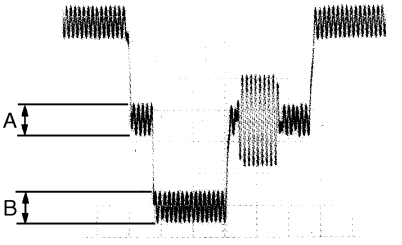
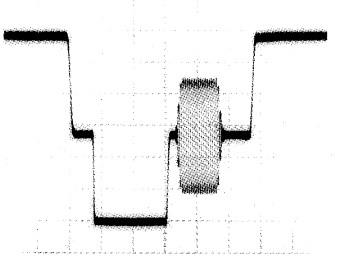
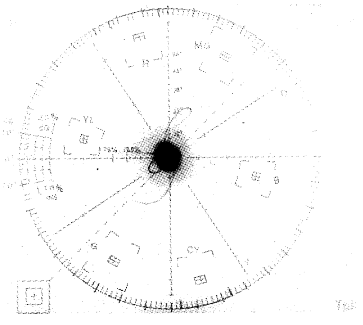
## 10-3-8. VIDEO OUT 1 Video/Sync Level Adjustment/Check

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br><br>Connection 2 | VIDEO OUT 1 (75 Ω terminated)<br><br>(A) Video Level<br><br>TRIG : REF. VIDEO<br>  <br><br><br>Spec.<br>[For NTSC]<br>A = 0.714 ±0.007 V (100 ±1 IRE)<br>B = 0.286 ±0.006 V (40 ±1.0 IRE)<br>[For PAL]<br>A = 0.700 ±0.007 V<br>B = 0.300 ±0.006 | [DSR-1800/P]<br>⊘RV902/VPR-71 (D-6)<br><br>[DSR-1600/P]<br>⊘RV402/IF-820 (B-5)<br><br>B : Check only |

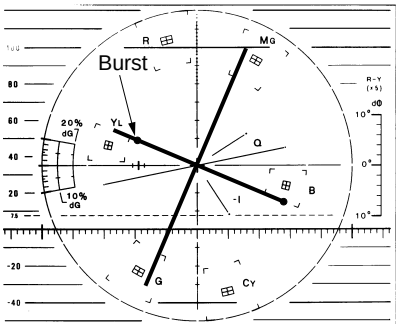
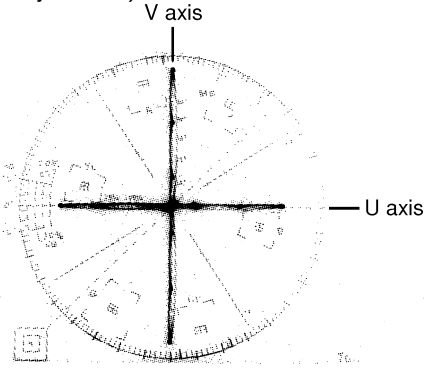
## 10-3-9. VIDEO OUT 2 Video Level Adjustment

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br><br>Connection 2 | VIDEO OUT 2 (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br><br>  <br><br><br>Spec.<br>[For NTSC]<br>A = 0.714 ±0.007 V (100 ±1 IRE)<br>[For PAL]<br>A = 0.700 ±0.007 V | [DSR-1800/P]<br>⊘RV905/VPR-71 (E-5)<br><br>[DSR-1600/P]<br>⊘RV405/IF-820 (B-5) |

## 10-3-10. ENC SC Leak Adjustment

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| **Step 1**<br>• PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br>• Set the time axis of the WFM to magnification mode<br><br>Connection 2 | VIDEO OUT 1 (75 Ω terminated)<br><br>(A) V SC Leak<br>(B) U SC Leak<br><br>TRIG : REF. VIDEO<br><br>WFM<br>Before adjustment<br>  <br><br>(Spec. Adjust the A and B alternately.)<br>⇩<br>After adjustment<br>  <br>Spec. Minimize the A, B.<br>A, B ≦ 0.007 V (1 IRE) | [DSR-1800/P]<br>(A) V SC Leak<br>⊘RV802/VPR-71 (E-4)<br>(B) V SC Leak<br>⊘RV803/VPR-71 (E-4)<br><br>[DSR-1600/P]<br>(A) V SC Leak<br>⊘RV302/IF-820 (B-4)<br>(B) V SC Leak<br>⊘RV303/IF-820 (B-4) |
| **Step 2 (Check)**<br>• PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br><br>Connection 2 | VIDEO OUT 1 (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br><br>Vector<br>  <br>Spec. Maximum the gain of the Vector and check the dot is at center. | |

## 10-3-11. U-V Axis (B-Y, R-Y) Phase Adjustment

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • PB mode<br><br>[Flow]<br>(A) Burst preset<br>• PB mode<br>Quad Phase/XH5-1A2 or XH5-1AP2<br>(05:20-06:00)<br><br>(B) V-axis phase adjustment<br>• PB mode<br>Quad Phase/XH5-1A2 or XH5-1AP2<br>(05:20-06:00)<br><br>Connection 2 | VIDEO OUT 1 (75 Ω terminated)<br><br>(A) Burst preset<br><br>(B) V-axis (U/V OFFSET)<br><br>TRIG : REF. VIDEO<br><br>Vector<br><br>(Before adjustment)<br>  <br><br>⇩<br>(After Adjustment)<br>  <br><br>Spec. (A) Set the dot of the burst in the right position on the scale.<br>(B) Set the dots of the R-Y on the V axis of the vector.<br>0 ±0.5 ° | ⊘PHASE control/Vector [DSR-1800/P]<br>⊘RV1100/VPR-71 (G-5)<br><br>[DSR-1600/P]<br>⊘RV600/IF-820 (G-6) |

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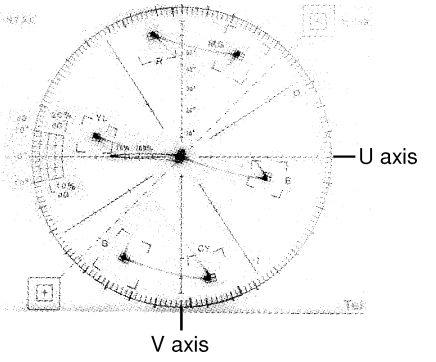
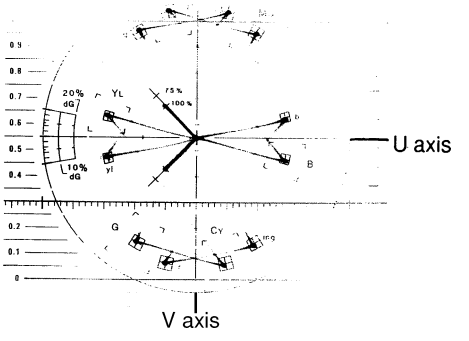
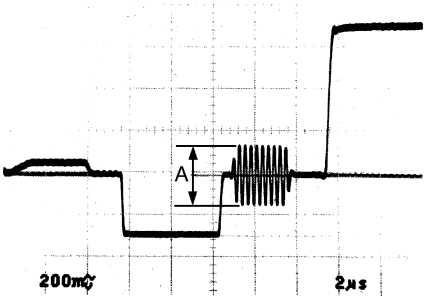
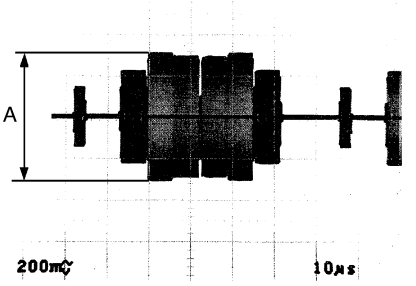
## 10-3-12. PB VIDEO OUT 1 Chroma/Burst Level Adjustment

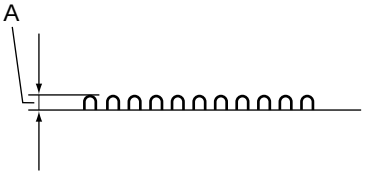
| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br><br>**Note**<br>The “Setup ON/OFF” setting of the DSR-2000 and that a vectorscope must have been set to the same position beforehand.<br><br>Connection 2 | VIDEO OUT 1 (75 Ω terminated)<br>Step 1 Chroma Level<br><br>(A) Burst preset<br><br>(B) ENC R-Y LEVEL<br>ENC B-Y LEVEL<br><br>TRIG : REF. VIDEO<br><br>Vector (for NTSC)<br>  <br><br>Vector (for PAL)<br>  <br><br>Spec. (A) Set the dot of the burst in the right position on the scale.<br>(B) All dots should be inside the “⊞” mark on the vector by adjustment RV200 and RV201 alternately. | ⊘PHASE control/Vector<br><br>[DSR-1800/P]<br>ENC R-Y LEVEL<br>⊘RV800/VPR-71 (F-4)<br>ENC B-Y LEVEL<br>⊘RV801/VPR-71 (F-4)<br><br>[DSR-1600/P]<br>ENC R-Y LEVEL<br>⊘RV300/IF-820 (B-4)<br>ENC B-Y LEVEL<br>⊘RV301/IF-820 (B-4) |

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br><br>Connection 2 | Step 2 Burst Level<br><br>TRIG : REF. VIDEO<br>  <br><br><br>Spec.<br>[For NTSC]<br>A = 0.286 ±0.003 V (40 ±0.5 IRE)<br>[For PAL]<br>A = 0.300 ±0.003 V | [DSR-1800/P]<br>⊘RV804/VPR-71 (E-4)<br><br>[DSR-1600/P]<br>⊘RV304/IF-820 (C-3) |

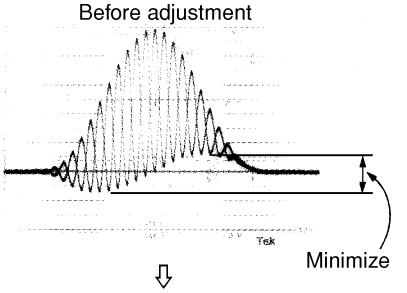
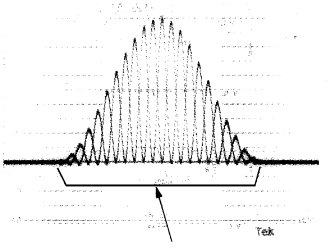
## 10-3-13. PB S VIDEO Chroma Level Adjustment

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• Setup add ; ON<br>• PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br><br>Connection 2 | S VIDEO (C) OUT (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br>  <br><br><br>Spec.<br>[For NTSC]<br>A = 0.627 ±0.007 V p-p (87.7 ±1 IRE)<br>[For PAL]<br>A = 0.885 ±0.006 V p-p | [DSR-1800/P]<br>⊘RV901/VPR-71 (E-5)<br><br>[DSR-1600/P]<br>⊘RV401/IF-820 (B-5) |

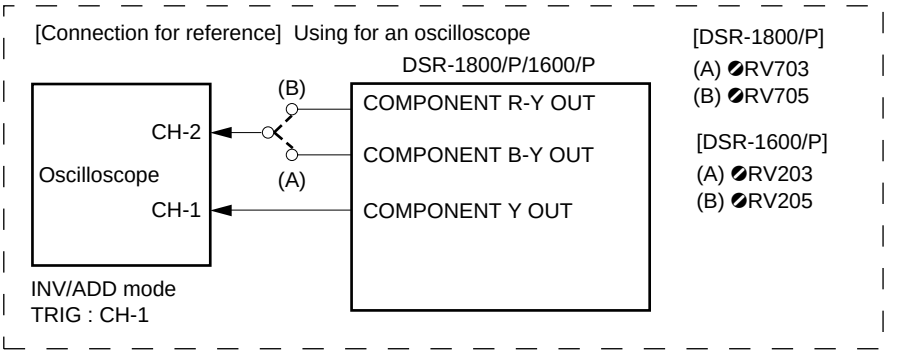
## 10-3-14. PB COMPOSITE C/C Delay Check

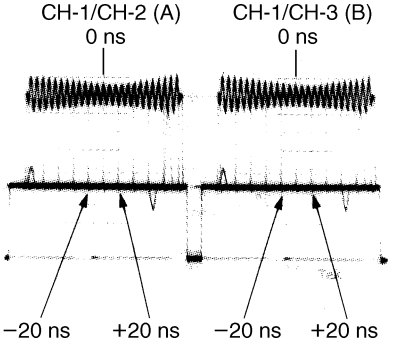
| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| Oscilloscope<br>Vertical mode : INV +ADD<br><br>• PB mode<br>Bowtie/XH5-1A2 or XH5-1AP2<br>(02:00-02:30)<br><br>Connection 2 | CH-1/Oscilloscope<br>[DSR-1800/P]<br>TP701/VPR-71 (G-4)<br><br>[DSR-1600/P]<br>TP201/IF-820 (C-5)<br><br>CH-2/Oscilloscope<br>[DSR-1800/P]<br>TP702/VPR-71 (G-4)<br><br>[DSR-1600/P]<br>TP202/IF-820 (C-5)<br>  <br><br><br>Spec. A = 0.020 V p-p | |

## 10-3-15. PB COMPOSITE Y/C Delay Adjustment

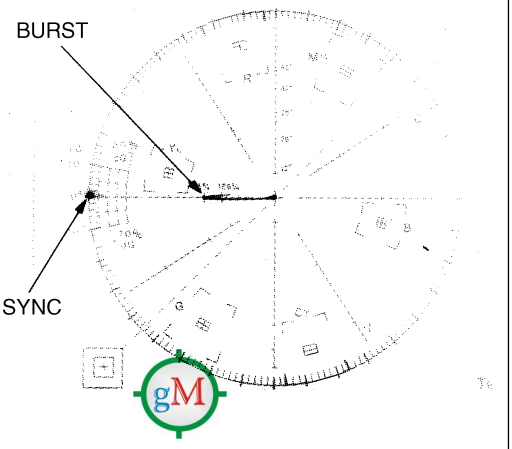
| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • PB mode<br>Mod 12.5T/XH5-1A2 or XH5-1AP2<br>(07:50-08:20)<br><br>Connection 2 | VIDEO OUT 1 (75 Ω terminated)<br><br>TRIG : INT/WFM<br><br>WFM<br>12.5T portion (for NTSC)<br>10T portion (for PAL)<br>Before adjustment<br>  <br><br>Minimize<br>⇩<br>After adjustment<br>  <br><br>Spec. Flat | [DSR-1800/P]<br>⊘RV701/VPR-71 (H-2)<br><br>[DSR-1600/P]<br>⊘RV201/IF-820 (C-2) |

## 10-3-16. PB COMPONENT Y/C Delay Adjustment

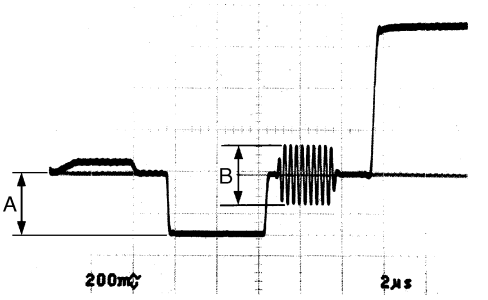



| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • PB mode<br>Bowtie/XH5-1A2 or XH5-1AP2<br>(02:00-02:30)<br><br>Connection 1 | COMPONENT OUT (75 Ω terminated)<br><br>(A) B-Y Delay<br>(B) R-Y Delay<br><br>TRIG : INT/WFM<br><br>Bowtie mode<br>  <br><br>Spec. Set the each Bowtie dip point of (A) and (B) on the center marker.<br>0 ±20 ns | [DSR-1800/P]<br>(A) B-Y Delay<br>⊘RV703/VPR-71 (F-6)<br>(B) R-Y Delay<br>⊘RV705/VPR-71 (F-6)<br><br>[DSR-1600/P]<br>(A) B-Y Delay<br>⊘RV203/IF-820 (C-5)<br>(B) R-Y Delay<br>⊘RV205/IF-820 (C-5) |

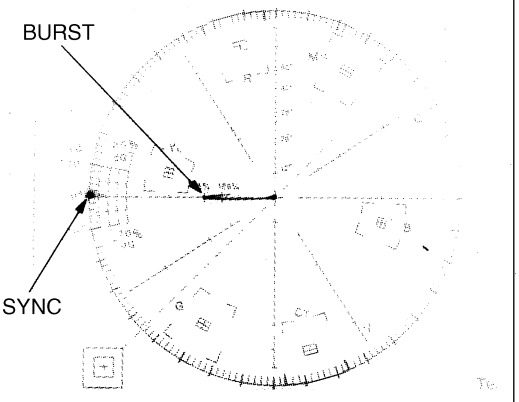
## 10-3-17. PB INT SCH Phase Adjustment (DSR-1800/P)

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br>• REF. VIDEO INPUT ; No signal<br><br>• AFTER ADJUSTMENT IS COMPLETED, RE-CONNECT THE REF. VIDEO INPUT.<br><br>Connection 2 | VIDEO OUT 1 (75 Ω terminated)<br><br>(A) Burst Preset<br><br>(B) INT SC<br><br>TRIG : INT/WFM<br><br>SCH mode<br><br>  <br><br><br>Spec. (A) Set the dot of the burst in the right position on the scale.<br>(B) The SYNC should be in the same phase as the burst (SCH = 0 °). | ⊘PHASE control/Vector<br><br>[DSR-1800/P]<br>⊘RV1101/VPR-71 (G-5)<br><br>[DSR-1600/P]<br>⊘RV601/IF-820 (G-6) |

## 10-3-18. REF. VIDEO OUT Sync/Burst Level Adjustment/Check (DSR-1800/P)

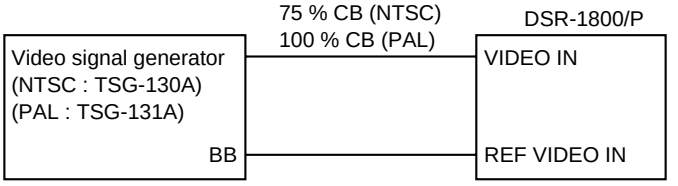
| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>・PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br>・REF. VIDEO INPUT ; No signal<br><br>・AFTER ADJUSTMENT IS COMPLETED, RE-CONNECT THE REF. VIDEO INPUT.<br><br>Connection 2 | REF. VIDEO OUT (75 Ω terminated)<br><br>(A) Sync Level<br>(B) Burst Level<br><br>TRIG : INT/WFM<br>  <br><br>Spec.<br>[For NTSC]<br>A, B = 0.286 ±0.003 V (40 ±0.5 IRE)<br>[For PAL]<br>A, B = 0.300 ±0.003 V | [DSR-1800/P]<br>(A) Sync Level<br>⊘RV100/VPR-71 (D-5)<br>(B) Burst Level :<br>Check only<br><br>[DSR-1600/P]<br>(A) Sync Level<br>⊘RV501/IF-820 (A-5)<br>(B) Burst Level :<br>Check only |

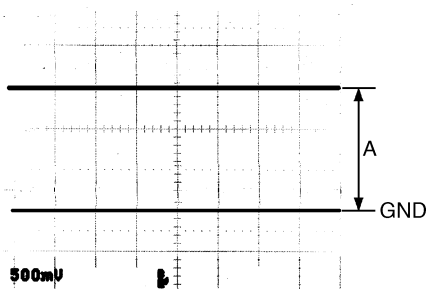
## 10-3-19. REF. INT SCH Phase Adjustment (DSR-1800/P)

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • PB mode<br>75 % Color bars/XH5-1A2 (for NTSC)<br>100 % Color bars/XH5-1AP2 (for PAL)<br>• REF. VIDEO INPUT ; No signal<br><br>• AFTER ADJUSTMENT IS COMPLETED, RE-CONNECT THE REF. VIDEO INPUT.<br><br>Connection 2 | REF. VIDEO OUT (75 Ω terminated)<br><br>(A) Burst Preset<br><br>(B) Sync Phase<br><br>TRIG : INT/WFM<br><br>SCH mode<br>  <br><br><br>Spec. (A) Set the dot of the burst in the right position on the scale.<br>(B) The SYNC should be in the same phase as the burst. (SCH = 0 ±3 °) | ⊘PHASE control/Vector<br><br>[DSR-1800/P]<br>⊘RV1000/VPR-71 (D-5)<br><br>[DSR-1600/P]<br>⊘RV500/IF-820 (A-5) |

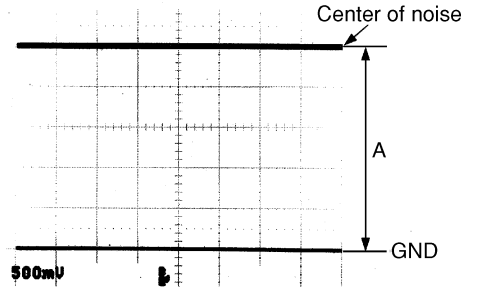
## 10-3-20. SPCK Error Adjustment (DSR-1800/P)

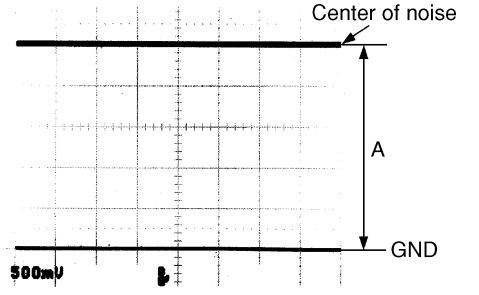
(Connection)




| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| Oscilloscope<br>• EE mode<br>• VIDEO IN ; 75 % Color bars (for NTSC)<br>100 % Color bars (for PAL) | TP600/VPR-71 (D-3)<br>  <br><br>Spec. A = 1.5 ±0.1 V dc | ⊘CT600/VPR-71 (D-4) |

## 10-3-21. COMPOSITE 4Fsc PLL DC Check/Adjustment (DSR-1800/P)

<table>
<tr><th>Conditions for adjustment</th><th>Specification</th><th>Adjustment</th></tr>
<tr><td rowspan="2">Oscilloscope<br>• EE mode<br>• VIDEO IN ; 75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br>• VIDEO IN select/MENU ; COMPOSITE<br><br>Connection 1</td><td>TP401/VPR-71 (A-2)<br><br>[Check]<br> 

<br>Spec. A = 2.5 ±0.5 V dc</td><td></td></tr>
<tr><td>TP400/VPR-71 (B-2)<br> 

<br>Spec. A = 2.5 ±0.5 V dc</td><td>⊘RV400/VPR-71 (A-2)</td></tr>
</table>

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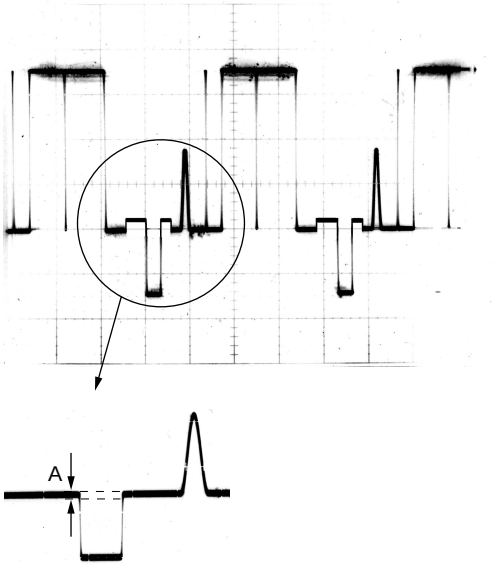
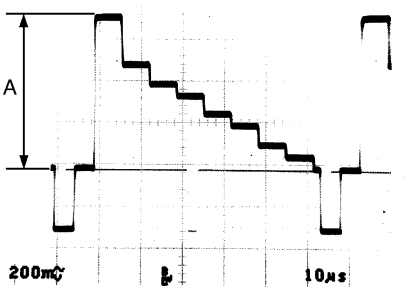
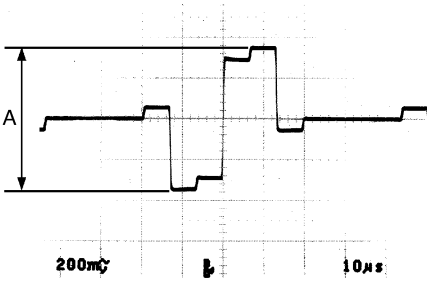
## 10-3-22. REC Y Clamp Level Adjustment (DSR-1800/P)

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• EE mode<br>• COMPONENT IN ; Pluse & Bar<br><br>**Note**<br>Check that only NTSC Setup add ; OFF<br><br>Connection 1 | COMPONENT Y OUT (75 Ω terminated)<br>  <br><br>Spec. A = Minimize the level difference A at setup. | ⊘RV503/VPR-71 (B-3) |

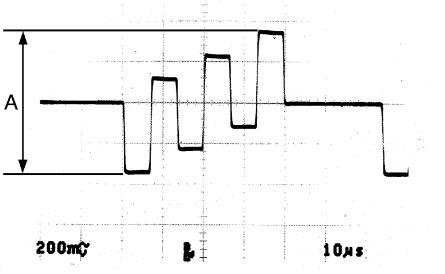
## 10-3-23. REC Y Level Adjustment (DSR-1800/P)

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• EE mode<br>• COMPONENT IN ;<br>75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br><br>Connection 1 | COMPONENT Y OUT (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br><br>  <br><br><br>Spec.<br>[For NTSC]<br>A = 0.714 ±0.007 V (100 ±1 IRE)<br>[For PAL]<br>A = 0.700 ±0.007 V | ⊘RV500/VPR-71 (B-4) |

## 10-3-24. REC COMPONENT R-Y Level Check (DSR-1800/P)

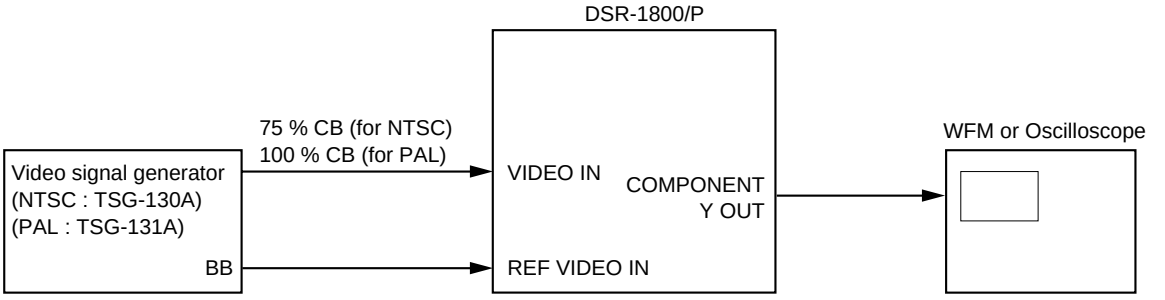
| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• EE mode<br>• COMPONENT IN ;<br>75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br><br>Connection 1 | COMPONENT R-Y OUT (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br>  <br>Spec.<br>[For NTSC]<br>A = 0.700 ±0.014 V p-p (98 ±2 IRE)<br>[For PAL]<br>A = 0.700 ±0.014 V p-p | |

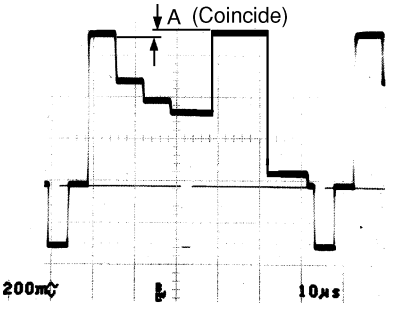
## 10-3-25. REC COMPONENT B-Y Level Check (DSR-1800/P)

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• EE mode<br>• COMPONENT IN ;<br>75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br><br>Connection 1 | COMPONENT B-Y OUT (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br>  <br>Spec.<br>[For NTSC]<br>A = 0.700 ±0.014 V p-p (98 ±2 IRE)<br>[For PAL]<br>A = 0.700 ±0.014 V p-p | |

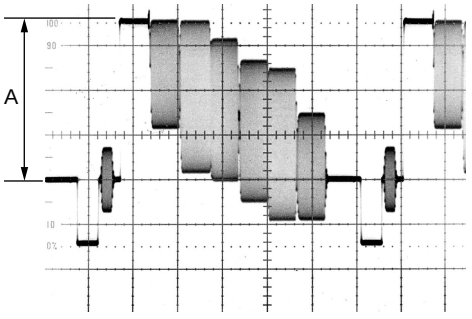
## 10-3-26. REC A/D Y Level Adjustment (DSR-1800/P)

(Connection)

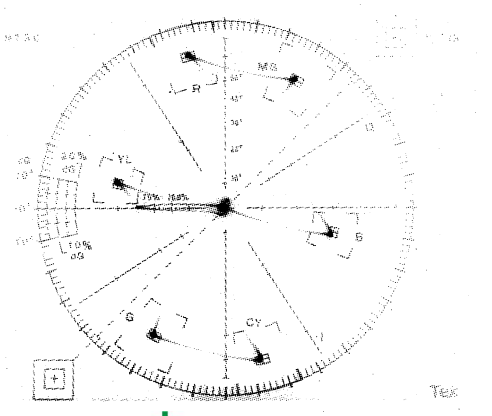
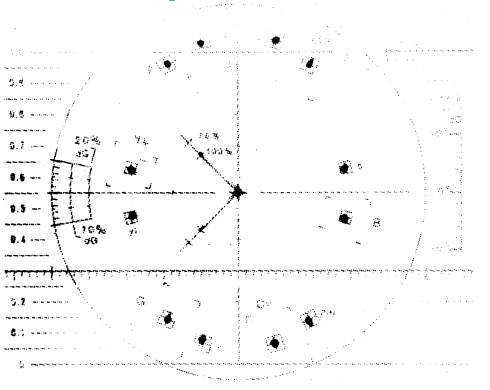



| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• EE mode<br>• VIDEO IN ; 75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br>• VIDEO IN select/MENU ; COMPOSITE<br>• S101-1/SV-212 (L-1) ; ON<br>• SETUP MENU<br>→ FACTORY USE<br>→ LEVEL MARKER ; ON<br><br>• After Adjustment, S101-1,<br>LEVEL MARKER ; OFF | COMPONENT Y OUT (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br>  <br><br>Spec.<br>[For NTSC]<br>A = 0 ±0.007 V (0 ±1 IRE)<br>[For PAL]<br>A = 0 ±0.007 V | ⊘RV202/VPR-71 (A-4) |

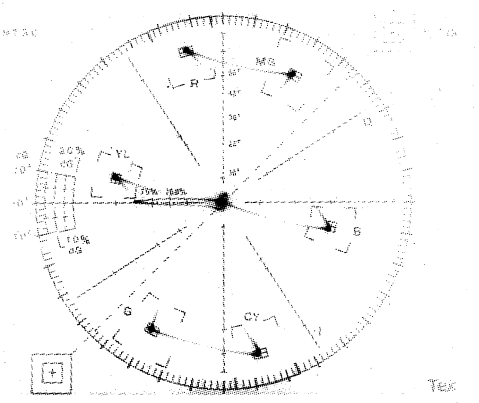
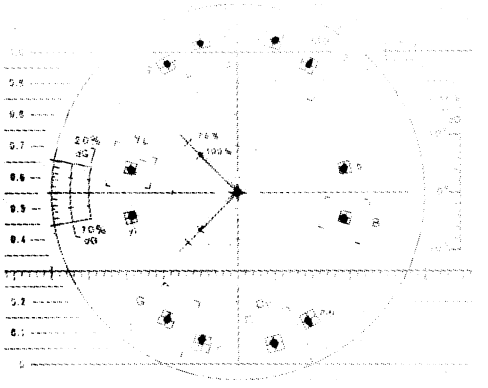
## 10-3-27. REC COMPOSITE Y Level Adjustment (DSR-1800/P)

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| WFM or Oscilloscope<br>• EE mode<br>• VIDEO IN ; 75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br>• VIDEO IN select/MENU ; COMPOSITE<br><br>Connection 2 | VIDEO OUT 1 (75 Ω terminated)<br><br>TRIG : REF. VIDEO<br>  <br><br>Spec.<br>[For NTSC]<br>A = 0.714 ±0.007 V (100 ±1 IRE)<br>[For PAL]<br>A = 0.700 ±0.007 V | ⊘RV300/VPR-71 (B-5) |

## 10-3-28. REC COMPOSITE Chroma Level Adjustment (DSR-1800/P)

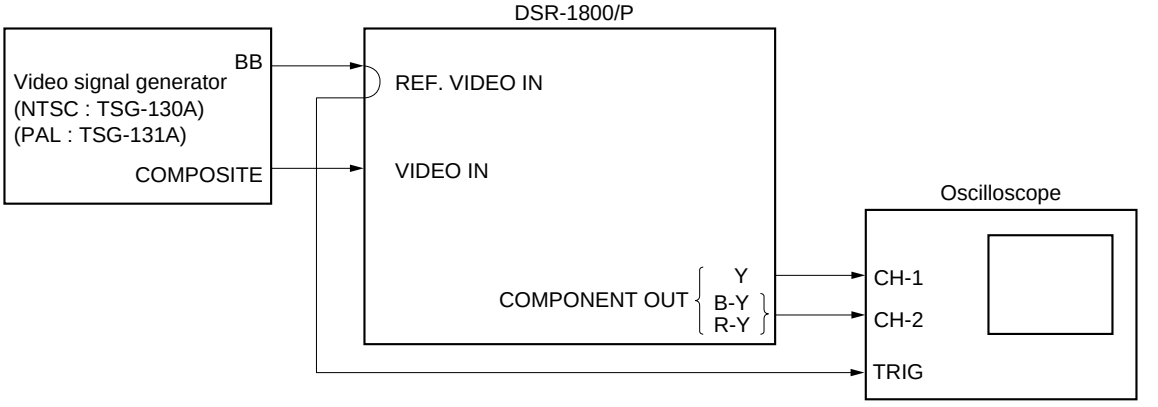
| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • EE mode<br>• VIDEO IN ; 75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br>• VIDEO IN select/MENU ; COMPOSITE<br><br>**Note**<br>The “Setup ON/OFF” setting of the DSR-1800/P and that a vectorscope must have been set to the same position beforehand.<br><br>Connection 2 | VIDEO OUT 1 (75 Ω terminated)<br><br>(A) Burst<br>(B) Composite Chroma Level<br><br>TRIG : REF. VIDEO<br><br>Vector (for NTSC)<br>  <br>Vector (for PAL)<br>  <br><br>Spec. (A) Set the dot of the burst in the right position on the scale.<br>(B) All dots should be inside the “田” mark on the vector. | ⊘PHASE control/Vector<br>⊘RV301/VPR-71 (B-5)<br>⊘RV302/VPR-71 (B-5) |

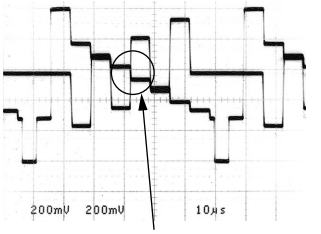
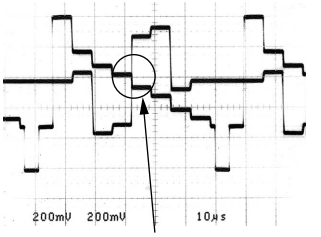
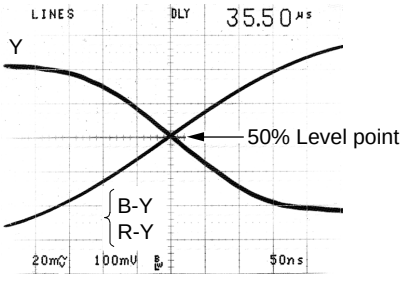
## 10-3-29. REC S VIDEO Chroma Level Adjustment (DSR-1800/P)

| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • EE mode<br>• S VIDEO IN ; 75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br>• VIDEO IN select/MENU ; S VIDEO<br><br>**Note**<br>The “Setup ON/OFF” setting of the DSR-1800/P and that a vectorscope must have been set to the same position beforehand.<br><br>Connection 2 | S VIDEO (C) OUT (75 Ω terminated)<br><br>(A) Burst<br>(B) S-C Level<br><br>TRIG : REF. VIDEO<br><br>Vector (for NTSC)<br>  <br><br>Vector (for PAL)<br>  <br><br>Spec. (A) Set the dot of the burst in the right position on the scale.<br>(B) All dots should be inside the “⊞” mark on the vector. | ⊘PHASE control/Vector<br>⊘RV200/VPR-71 (A-5) |

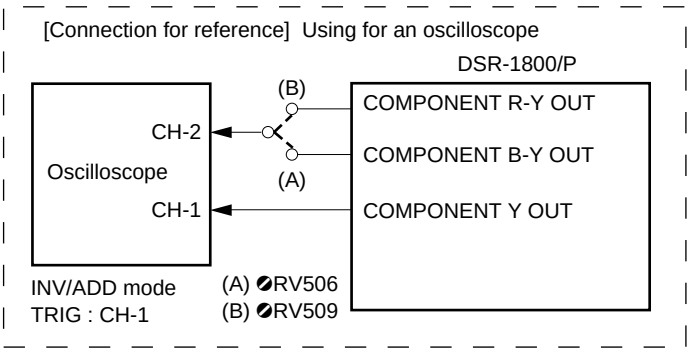
## 10-3-30. REC COMPOSITE Y/C Delay Adjustment (DSR-1800/P)

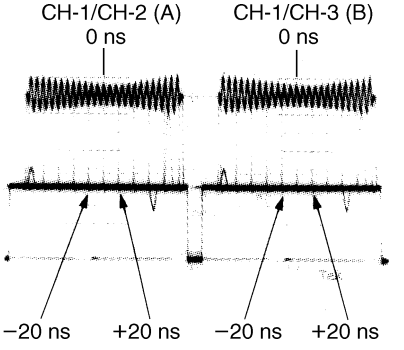
(Connection)




| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • EE mode<br>• VIDEO IN ; 75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br>• VIDEO IN select/MENU ; COMPOSITE | COMPONENT OUT (75 Ω terminated)<br>B-Y<br>  <br>A portion<br>R-Y<br>  <br>A portion<br>(Detail of A portion)<br>  <br>Spec. 0 ±20 ns | B-Y : ⊘RV504/VPR-71 (C-4)<br>R-Y : ⊘RV507/VPR-71 (C-4) |

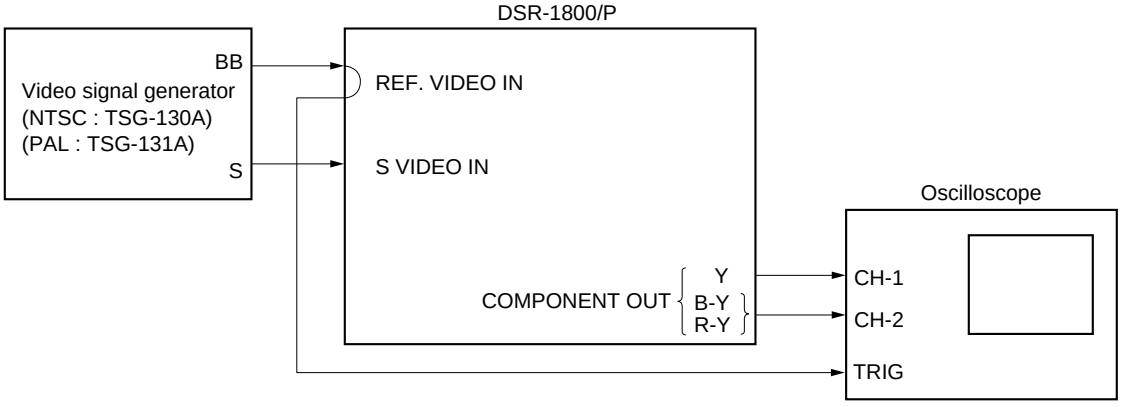
## 10-3-31. REC COMPONENT Y/C Delay Adjustment (DSR-1800/P)

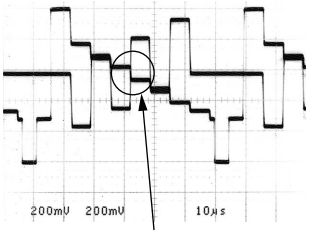
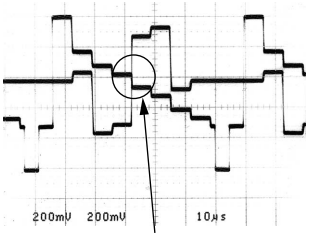
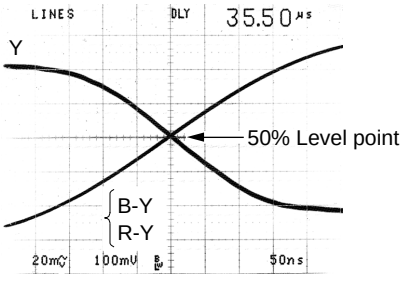



| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • EE mode<br>• COMPONENT IN ; Bowtie | COMPONENT OUT (75 Ω terminated) | |
| | (A) B-Y Delay<br>(B) R-Y Delay | ⊘RV506/VPR-71 (C-4)<br>⊘RV509/VPR-71 (C-4) |
| | TRIG : INT/WFM<br>Bowtie mode<br>  <br><br>Spec. Set the each Bowtie dip point of (A) and (B) on the center marker.<br>0 ±20 ns | |
| Connection 1 | | |

## 10-3-32. REC S VIDEO Y/C Delay Adjustment (DSR-1800/P)

(Connection)




| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| • EE mode<br>• S VIDEO IN ; 75 % Color bars (for NTSC)<br>100 % Color bars (for PAL)<br>• VIDEO IN select/MENU ; S VIDEO | COMPONENT OUT (75 Ω terminated)<br>B-Y<br>  <br><br>A portion<br>R-Y<br>  <br><br>A portion<br>(Detail of A portion)<br>  <br><br>Spec. 0 ±20 ns | B-Y : ⊘RV505/VPR-71 (C-4)<br>R-Y : ⊘RV508/VPR-71 (C-4) |

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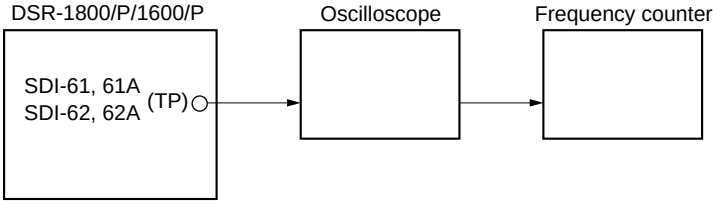
# 10-4. SDI/SDTI (Option Boards)

## 10-4-1. Free Run Adjustment

(Connection)




| Conditions for adjustment | Specification | Adjustment |
|---|---|---|
| **Step 1**<br>• E-E mode<br>• Connect jumper wire between TP402 (B-4)/SDI-62, 62A and E401 (D-4)/ SDI-62, 62A.<br>• After adjustment, remove jumper wire. | TP401 (C-5)/SDI-62, 62A<br>(SDI ENC FREQ.)<br>Spec. 27.0 ±0.1 MHz | ⊘RV401 (B-5)/<br>SDI-62, 62A |
| **Step 2**<br>• E-E mode<br>• Connect jumper wire between TP101 (A-4)/SDI-62 and E101 (A-4)/SDI-62.<br>• After adjustment, remove jumper wire. | TP102 (A-4)/SDI-62<br>(SDI DEC FREQ.)<br>Spec. 27.0 ±0.1 MHz | ⊘RV101 (A-5)/SDI-62 |
| • E-E mode<br>• Connect jumper wire between TP302 (B-3)/SDI-61, 61A and E301 (B-3)/ SDI-61, 61A.<br>• Select SDTI with INPUT SELECT.<br>• After adjustment, remove jumper wire. | TP301 (C-4)/SDI-61, 61A<br>(SDTI ENC FREQ.)<br>Spec. 27.0 ±0.1 MHz | ⊘RV301 (B-3)/<br>SDI-61, 61A |
| • E-E mode<br>• Connect jumper wire between TP201 (A-4)/SDI-61 and E201 (B-3)/SDI-61.<br>• Select SDTI with INPUT SELECT.<br>• After adjustment, remove jumper wire. | TP202 (A-2)/SDI-61<br>(SDTI DEC FREQ.)<br>Spec. 27.0 ±0.1 MHz | ⊘RV201 (B-3)/SDI-61 |

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

**LEAKAGE TEST**

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers’ instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

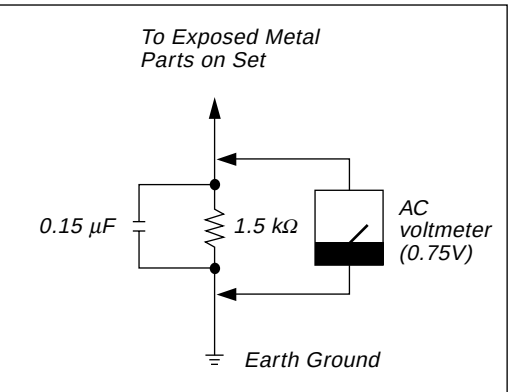



*Fig A. Using an AC voltmeter to check AC leakage.*

DSR-1800 (UC)
DSR-1800P (CE)
DSR-1600 (UC)
DSR-1600P (CE) E
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